SUPPLEMENTAL SCR AND RAP
FORMER ROUTE 119 AMOCO
FACILITY
FACILITY ID #26-18711
1809 UNIVERSITY DRIVE (RTE 119)
DUNBAR TWP.,
FAYETTE CO., PENNSYLVANIA 15431

FOR

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Project Number: 13-17313-01

BY

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EXECUTIVE SUMMARY
SUPPLEMENTAL SITE CHARACTERIZATION REPORT
AND REMEDIAL ACTION PLAN
FORMER ROUTE 119 AMOCO FACILITY
FACILITY ID #26-18711
1809 UNIVERSITY DRIVE (RTE 119)
DUNBAR TOWNSHIP
FAYETTE COUNTY, PENNSYLVANIA 15431

The following is an Executive Summary of the Site Characterization, as presented in the body of this report that was conducted by Converse Consultants (Converse). Please refer to the appropriate sections of the report for a complete discussion of these issues. In the event of a conflict between this Executive Summary and the report, or an omission in the Executive Summary, the report shall prevail.

Converse Consultants (Converse), on behalf of Tim and Michele Shell, submits this Supplemental Site Characterization Report (SSCR) to document additional site characterization activities that were conducted at the Former Route 119 Amoco facility located at 1809 University Drive (Route 119) in Dunbar Township, Fayette County, Pennsylvania (Property). The scope of work for site characterization activities completed by Converse was prepared by USTIF and documented in the Additional Site Characterization and Site Closure Activities Competitive Bid Solicitation issued on January 29, 2013.

The supplemental site characterization included the following primary tasks:

1. Completion of a Site-Specific Health and Safety Plan.
2. Installation and development of thirteen (13) additional shallow bedrock groundwater monitoring wells (monitoring wells MW-10S, MW-12S, MW-13S, MW-18S, MW-19S, MW-20S, MW-21S, MW-22S, MW-23S, MW-24S, MW-25S, MW-26S, and MW-27S) on adjacent properties to further assess the extent of the impacted groundwater plume. The groundwater monitoring wells were installed to depths of approximately 30 feet below grade (fbg) and were screened to intercept the shallow bedrock aquifer.
3. Completion of four (4) rounds of additional Site Characterization groundwater sample collection.
4. Development of an updated site conceptual model.
5. Compilation and submission of this Supplemental Site Characterization Report (SSCR) and Revised Remedial Action Plan (RRAP).

GROUNDWATER – As expected based on historical groundwater data, the laboratory results indicate that petroleum constituents in the groundwater are present beneath the Property at levels that exceed the RMSC SHSs. Data from the new shallow bedrock monitoring wells MW-10S, MW-12S, MW-13S, MW-15S and MW-18S through MW-22S confirm that the extent of the MTBE plume continues well beyond the property borders. MW-23S through MW-27S were installed to fully delineate the dissolved groundwater plume.

The nature and distribution of dissolved phase unleaded gasoline constituents in groundwater at the former Amoco station site suggests a residual plume of gasoline constituents. Identified source areas include residual soil in the area of the release and LNAPL that has migrated onto a downgradient property.

SOIL – Concentrations of contaminants in soil remain above the NRMSC SHSs in a limited area on the property.

SITE CONCEPTUAL MODEL – Current data for the Site indicate:

1. The primary surface water discharge boundary in the area of the Site is believed to be an unnamed intermittent tributary of Gist Run which is located approximately 1000 feet southwest west of the property. A pond is located approximately 900 feet west of the property that receives some of the flow from the area of the Site.
2. No distinct confining unit was evident in the subsurface that was evaluated by this study.
3. The overburden consists mostly of clay mixed with varying degrees of silt and sand. Bedrock was encountered at a depth of approximately 10 feet below grade.
4. The water table is located at elevations generally below the known depth of cultural features such as basements and utility trenches.
5. Concentrations of contaminants are generally decreasing on the property but remain above the RMSC. An area of high contaminant concentrations also is located on the residential property to the west of the Former Amoco property, and concentrations of benzene and MTBE have increased at this location. Historical and current groundwater data suggests that the plume is generally stable.
6. The distribution of impacted groundwater indicates that the source area for the current groundwater plume is residual dissolved contamination in the groundwater, an area of LNAPL within bedrock, and a limited area of impacted soil.

PLANNED ACTIVITIES - Converse has proposed a minimum of four (4) additional quarterly groundwater sampling events to provide a statistically valid evaluation of

contaminant trends. As LNAPL is located in close proximity to the residence, additional soil vapor samples will also be collected to evaluate potential IAQ issues in accordance with the latest vapor intrusion guidance document.

Converse will complete interim remedial measures to assess the extent of LNAPL on the downgradient property and initiate product recovery activities.

The third quarter 2017 groundwater sample collection event is scheduled for the end of September 2017.

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SUPPLEMENTAL SITE CHARACTERIZATION REPORT
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1809 UNIVERSITY DRIVE (ROUTE 119)
DUNBAR TOWNSHIP, FAYETTE COUNTY, PENNSYLVANIA

1.0 INTRODUCTION

Converse Consultants (Converse), on behalf of Tim and Michele Shell, submits this Supplemental Site Characterization Report (SSCR) to document additional site characterization activities that were conducted at the Former Route 119 Amoco located at 1809 University Drive (Route 119) in Dunbar Township, Fayette County, Pennsylvania (Property). The additional site characterization was conducted to further assess a release of petroleum product (unleaded gasoline) that was documented in May 1996 from a regulated underground storage tank (UST) system at the Property. Appendix A: Figure 1 presents the location of the Property relative to area roads and features.

The scope of work for site characterization activities completed by Converse was originally prepared by USTIF to address PADEP comments in the PADEP site characterization approval letter of February 23, 2007. Ultimately, the site characterization activities were conducted to: 1) assess the lateral extent of petroleum constituents in soil and groundwater that resulted from the release of product from a former underground storage tank (UST) system at the Property; 2) comply with the requirements of *25 Pennsylvania Code Chapter 245* (§245). *Subchapter D: Corrective Action Process for Owners and Operators of Storage Tanks and Storage Tank Facilities and Other Responsible Parties*; and 3) collect data that are necessary to assess attainment of one (1) or more of the remediation standards that are promulgated in and to comply with the requirements of *25 Pennsylvania Code Chapter 250* (§250)*: Administration of the Land Recycling Program.*

The supplemental site characterization included the following primary tasks:

1. Completion of a Site-Specific Health and Safety Plan.

2. Installation and development of thirteen (13) additional shallow bedrock groundwater monitoring wells (monitoring wells MW-10S, MW-12S, MW-13S, MW-18S, MW-19S, MW-20S, MW-21S, MW-22S, MW-23S, MW-24S, MW-25S, MW-26S, and MW-27S) at the site to further assess the extent of the impacted groundwater plume. The groundwater monitoring wells were installed to depths of approximately 30 feet below grade (fbg) and were screened across the water table that was encountered during drilling.
3. Completion of four (4) rounds of additional Site Characterization groundwater sample collection.
4. Development of an updated site conceptual model.
5. Compilation and submission of this Supplemental Site Characterization Report (SSCR) and Revised Remedial Action Plan (RRAP).

2.0 DOCUMENTATION AND ADMINISTRATIVE SUMMARY

2.1 PRIMARY CONTACTS

Responsible Party

Tim and Michele Shell
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(724) 438-8472
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Consultant

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PADEP – Southwest Region
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(412) 442-4000
Primary Contact: Ms. Patricia L. Renwick

2.2 SITE USE DESIGNATION

For the purpose of this submission, a "Property" is defined as a parcel of land that is defined by metes and bounds that are set forth in the deed for that land and is the originating property of the constituents of concern (COC) that are assessed by the Site Characterization and addressed during Remedial Action. As presented in §250.1, a Site is defined as "the extent of contamination originating within the

property boundaries and all areas in close proximity to the contamination necessary for the implementation of remediation activities to be conducted under the act". More than one (1) Site can be located within the boundaries of a property and a Site can extend beyond the boundaries of a property.

One (1) Site was identified during the Site Characterization. The Site extends beyond the boundary of the Property and includes soil and groundwater that are circumscribed by the monitoring wells and UST area at the Site.

Appendix A: Figure 2 presents cultural features that are located on and the general area of the Site. The Property has historically been utilized to service, store, and fuel vehicles. There are no longer any USTs located at the Property. The current use of the Property meets the definition of a Nonresidential Property as promulgated in *Act 2 of 1995: Pennsylvania Land Recycling and Environmental Remediation Standards Act (*Act 2), *Section103*. The use of properties that are adjacent to the Site consists primarily of commercial, residential, and undeveloped land. The current use of surrounding properties meets the definition of nonresidential and residential property as promulgated in *Act 2, Section103*. The probable future use of the Property and adjacent properties may be for either Residential or Nonresidential purposes.

Constituent concentrations in the soil were evaluated with respect to the Nonresidential Medium Specific Concentration (NRMSC) Statewide Health Standards (SHSs) that are promulgated in §250*:* Subchapter C. Constituent concentrations in groundwater were evaluated with respect to the Residential Medium Specific Concentration (RMSC) Statewide Health Standards (SHSs) that are promulgated in §250*:* Subchapter C.

§250.302(a) and 407(a) stipulate that the point of compliance (POC) "is the property boundary that existed at the time the contamination was discovered". Data indicate that compounds of concern (COCs) extend beyond the downgradient POC at concentrations greater than the RMSC SHS.

2.3 SELECTED STANDARD

§245.310(a)(26) requires the identification of the remediation standard that has or will be attained. Act 2 requires that the attainment of one (1) or a combination of three (3) cleanup standards be demonstrated by scientifically recognized principles, standards, and procedures. The cleanup standards include the Background Standard (BGS), the Statewide Health Standard (SHS), and the Site Specific Standard (SSS). §250 promulgates cleanup criteria for three (3) specific media: soil not in the zone of groundwater saturation (unsaturated soil); soil in the zone of groundwater saturation (saturated soil); and groundwater. Act 2 also requires that the Remediator notify PADEP which standard(s) will be used to demonstrate attainment.

The Site-Specific Standard (SSS), as defined in Act 2: Section 303 and §250: Subchapter C, is the cleanup standard that is selected for both soil and groundwater beneath the Site.

2.4 DEED ACKNOWLEDGEMENT AND UNIFORM ENVIRONMENTAL COVENANT ACT

Act 2: Section 303(g) requires that "persons attaining and demonstrating compliance with the Statewide Health Standard considering residential exposure factors for a regulated substance shall not be subject to the deed acknowledgment requirements of" the sections of Pennsylvania Law (P.L.) specified in Act 2: Section 303(g), but "the deed acknowledgment requirements shall apply where nonresidential exposure factors were used to comply with the Statewide health standard". Act 2: Section 304(m) requires that "persons attaining and demonstrating compliance with the site-specific standard for a regulated substance shall be subject to the deed acknowledgment requirements of" the sections of Pennsylvania Law (P.L.) that are specified in Act 2: Section 304(m). A deed acknowledgment may be necessary for the Former Route 119 Amoco Property that is the subject of this Report.

The Pennsylvania Uniform Environmental Covenants Act (UECA: Act 68 of 2007) requires a covenant on the real property if an engineering control or institutional control

is necessary to demonstrate attainment of an Act 2 standard. Engineering controls can include, but are not limited to, slurry walls, liner systems, caps, leachate collection systems, and groundwater recovery trenches. Institutional controls are measures taken to limit or prohibit certain activities that may interfere with the integrity of a remedial action or result in exposure to regulated substances at a property. The covenant can act as the deed acknowledgement. A covenant may be required for the Former Dunbar Amoco Property.

2.5 RELEASE REPORTING

2.5.1 Submissions to PADEP

§245.305(a) requires that "the owner or operator of storage tanks and storage tank facilities shall notify the appropriate regional office of the Department as soon as practicable, but not later than 24 hours, after the confirmation of a reportable release" and §245.305(c) requires that "the notice required by subsection (a) shall be by telephone". A release of product was identified at the Property in May 1996. Based on a file review by Converse, PADEP was notified of the release from the UST system.

§245.305(d) requires that "within 15 days of the notice required by subsection (a), the owner or operator shall provide written notification to the Department and to each municipality in which the reportable release occurred, and each municipality where the release has impacted environmental media or water supplies, buildings or sewer or other utility lines". A copy of the release notification was provided to Converse in documentation accompanying the Request For Bid (RFB).

§245.305(e) requires that "the owner or operator shall provide written notification to the Department and each impacted municipality of new impacts to environmental media or water supplies, buildings, or sewer or other utility lines discovered after the initial written notification required by subsection (d). Written notification under this subsection shall be made within 15 days of the discovery of the new impact". The former UST system was removed in 2005 and the impacts assessed in this report are considered to be the result of the reported release. No new impact was discovered.

2.5.2 Submissions to the Municipality

As presented in Section 2.5.1, municipal notification requirements are specified in §245.305(d) and (e). Dunbar Township, Fayette County, Pennsylvania is the municipality in which the release occurred and where impacted media have been identified. Documents that were provided to Converse indicate that the municipality was notified on May 25, 1996.

2.6 COMMUNITY INVOLVEMENT

§245 does not require the development or implementation of a community involvement plan.

2.7 FEDERAL, STATE, AND LOCAL PERMITS OR APPROVALS

To the best of our knowledge, PADEP approval of this Supplemental Site Characterization Report is the only Federal, State, or Local permit or approval that is necessary at this point in time.

2.8 ADDITIONAL NOTIFICATION AND COMMUNICATIONS

No additional notification to a public or private entity was made.

2.9 OFF-PROPERTY ACCESS AGREEMENTS

§250.410(c) requires that "when a person proposes a remedy that relies on access to properties owned by third parties, for remediation or monitoring, documentation of cooperation or agreement shall be submitted as part of the cleanup plan".

Delineation of the impacted soil and groundwater required the installation of multiple borings within the PENNDOT right-of-way and on nearby residential property owned by Scott and Cathy Malago, Fay-Penn Economic Development Council, Civic Development Company, and Dr. Fred Edge. The Township of Dunbar provided access to the PENNDOT right-of-way, and the private property owners granted access to their properties for monitoring well installation and groundwater monitoring activities.

2.10 AQUIFER USE DETERMINATION

The aquifer beneath and in the area of the Property is considered to be used and currently planned for use (§250.403(b)) and to contain less than 2,500 milligrams per liter (mg/l) of total dissolved solids.

2.11 AFFECTED OR DIMINISHED WATER SUPPLY

Act 32 of 1989: Storage Tank and Spill Prevention Act (*Act 32*) and §245.307 require that any responsible party who affects or diminishes a water supply as a result of a release must restore or replace the affected or diminished water supply at no cost to the owner of the supply.

No affected or diminished water supply was identified during the course of the investigation that is documented in this Report.

2.12 PREVIOUSLY SUBMITTED REPORTS AND PADEP RESPONSES

2.12.1 General

The following documents were provided to Converse, were previously submitted to PADEP, and are incorporated herein by reference. Copies of PADEP documents that were submitted in response are also listed below, if available.

2.12.2 Previous Reports, Approval Requests, and Notifications

1. *Site Characterization Report, Route 119 Amoco, Facility ID #26-18711, State Route 119, Dunbar Township, Fayette Co. Dunbar, Pennsylvania*, dated May 4, 1998, prepared by Chambers Environmental Group, Inc. of Pleasant Gap, Pennsylvania (1998 SCR/RAP).
2. *Comprehensive Environmental Site Characterization (SCR/RAP), Facility ID #26-18711, Former Route 119 Amoco, 1809 University Drive, Dunbar, Pennsylvania 15431,* dated September 2006, prepared by Letterle & Associates, LLC of Allison Park, Pennsylvania (2006 SCR/RAP).
3. *Additional Site Characterization Report/Groundwater Monitoring Report (SCR), PADEP Facility ID # 26-18711, Former Route 119 Amoco, 1809 University Drive, Dunbar, Pennsylvania 15431*, dated April 2011, prepared by Letterle & Associates,

LLC of Allison Park, Pennsylvania (2011 SCR).

4. *Yearly Progress Report and Pilot Test (additional SCR), PADEP Facility ID #26-18711, Former Route 119 Amoco, 1809 University Drive, Dunbar, Pennsylvania 15431*, dated April 2012, prepared by Letterle & Associates, LLC of Allison Park, Pennsylvania (2012 SCR)

2.12.3 PADEP Submissions and Responses

1. *SCR Approval Letter, dated February 23, 2007, signed by Ms. Patricia Renwick from the PADEP Southwest Regional Office.*

2.13 FIELD ACTIVITY CHRONOLOGY

The Supplemental Site Characterization field activities were completed during the period of May 2014 through September 2016. The events and activities of this Site Characterization are summarized in the following chronology of events:

Date	Field Activity
May 15 and 16, 2014:	Installation and development of shallow bedrock monitoring wells MW-10S, MW-12S, MW-13S, MW-18S, MW-19S, MW-20S, MW-21S, and MW-22S.
June 24, 2014:	Complete round of groundwater levels and groundwater sampling event.
August 28, 2014:	Complete round of groundwater levels and collection of groundwater samples from newly installed wells MW-10S, MW-12S, MW-13S, MW-18S, MW-19S, MW-20S, MW-21S, and MW-22S.
June 16 and 17, 2016:	Installation and development of shallow bedrock monitoring wells MW-23S, MW-24S, MW-25S, MW-26S, and MW-27S
June 30, 2016:	Complete round of groundwater levels and groundwater sampling event.

September 20, 2016: Complete round of groundwater levels and collection of groundwater samples from newly installed wells MW-23S, MW-24S, MW-25S, MW-26S and MW-27S.

3.0 PROPERTY DESCRIPTION

3.1 SITE LOCATION

The Property (Former Route 119 Amoco) is located at 1809 University Drive (SR 119), Dunbar Township, Fayette County, Pennsylvania (N39° 58' 04.21", W79° 38' 46.84" [NAD 83]). Appendix A: Figure 1 presents the location of the Property relative to area roads and features.

3.2 PROPERTY SETTING

The Uniontown, Pennsylvania USGS 7.5-minute Quadrangle Map indicates that the elevation of the Property is approximately 1250 feet above mean sea level. The Site is located on the Allegheny Plateau near its border with the Valley & Ridge Province. The topography of the property is gently sloping to the southeast, toward Route 119. The Property sits between the forks of a Y-intersection where Route 119 intersects Hi-Way Supply Road. The site extends to the west across Hi-Way Supply Road and into a field sloping gently to the west behind the adjacent residence, which sits at approximately the same elevation as the Property.

No surface water body is present within the boundaries of the Property. A small, unnamed pond lies approximately 900 feet west of the Property, with a small drainage stream flowing southward from it.

Use of properties in the immediate area of the Site consists primarily of a mixture of commercial uses, residential properties, and undeveloped land.

This and previous investigations at the Site indicate that groundwater flow within the overburden beneath the former Amoco property is locally to the southwest and west.

3.3 PROPERTY DESCRIPTION AND OPERATIONS

Appendix A: Figure 2 presents site features and the boundaries of the Property. The Property is currently owned by Mick McGuire. The Property is currently operated as a retail used automobile dealership and auto repair shop. All former USTs at the Property

have been removed, however their historical locations at the Property are shown on Figure 2.

The Property is gently sloping to the southeast and is covered with pavement (concrete or asphalt) and gravel. The area of the former release is covered by pavement. One slab on grade building is located at the Property and the Property and surrounding areas are served by public water and sewer.

4.0 SUMMARY OF PREVIOUS INVESTIGATIONS AND INTERIM REMEDIAL ACTIVITIES

4.1 GENERAL

A petroleum release at the Site was discovered in 1996 due to the presence of unusual levels of gasoline vapors and stained soil observed while excavating above the tanks to upgrade piping. The release was traced to loose swing joints and coupler connections along the subsurface piping to the dispensers at the Facility. The UST system was removed as part of the cleanup in 2005. Impacted media removed at the time of closure for off-site disposal included 86 tons of impacted soil.

A Site Characterization Report (SCR) and Remedial Action Plan (RAP) were submitted to the Department by the previous consultant on May 4, 1998. Additional information was supplied to the Department in September 2006, April 2011 and April 2012. The SCR was approved by the Department with modifications on February 23, 2007. Appendix A: Figure 2 presents the location of the Property relative to area roads and features.

4.2 CLOSURE OF UST SYSTEMS

Precision Tank Modifications, Inc. prepared a UST closure report dated February 2, 2005 (included as part of Letterle 2006 SCR) to document the tank removal activities and interim remedial measures that were conducted in 2005. The UST closure activities included the removal of two (2) 8,000-gallon gasoline USTs, one (1) 4,000-gallon gasoline UST and one (1) 1,000-gallon kerosene UST, and one (1) 550-gallon heating oil UST and all of the piping and dispensers.

Impacted soil was removed from the UST area. A total of six (6) soil and two (2) water samples were collected for the purpose of assessment and waste disposal. Sample collection included:

- One (1) soil sample beneath the excavations for piping runs.
- Two (2) soil samples from the walls of the excavations.
- Three (3) soil samples beneath the excavations for the dispenser islands.

- Two (2) water samples from the base of the excavations.

The analytical results from the water samples exceeded the MSC for benzene, toluene, ethylbenzene, MTBE, and naphthalene. The analytical results from the soil samples exceeded the MSC for benzene, naphthalene and toluene.

4.3 PREVIOUS SITE CHARACTERIZATION

Site Characterization began in May 1996 and continued until April 2012 prior to the current site characterization. The first investigation included in the installation of sixteen (16) soil borings and six (6) groundwater monitoring wells and two (2) recovery wells. The results of the initial investigation indicated that both soil and groundwater below the Site were impacted with gasoline constituents. Historical soil sample results are presented in Appendix A: Figure 3. Benzene, toluene, MTBE, xylenes, ethylbenzene, and naphthalene were detected in groundwater samples.

In June 1998, an Air Sparge/Soil Vapor Extraction (AS/SVE) pilot test was started. According to Chambers, the consultant at the time, the AS/SVE system would be effective for treating the Site contamination. The Remedial Action Plan (RAP) was approved by PADEP in August 1998. Free product in MW-3 was noted in the RAP. The AS/SVE system was deactivated on June 21, 2000.

In 2000, RETTEW was contracted to review the remedial action at the Site. RETTEW proposed to modify the AS/SVE system by installing high diffusion air bubblers (HDABs) in the AS wells to enhance the treatment of dissolved petroleum constituents in groundwater. Review of the groundwater data indicated that impacted groundwater was migrating away from the release area. The Revised RAP was disapproved by PADEP stating that additional groundwater characterization was necessary to delineate the dissolved-phase plume. RETTEW conducted an interim remedial action in June 2001, which included the installation of HDABs in MW-1, MW-3, RW-2, SVE-2 and SVE-3, the addition of enzyme complexes, nutrients and bacterial consortium to degrade hydrocarbons and MTBE. The bioremedial system operated until July 2005. A deep well (DW-1) was installed in July 2001 to evaluate the vertical extent of

contamination. RETTEW continued quarterly groundwater monitoring until July 2005. The results of the groundwater sampling indicated that the gasoline constituents were significantly decreased but benzene and MTBE remained above the MSCs in several wells.

In July 2005, Letterle was contracted to complete the corrective actions necessary at the Site. Letterle performed additional site characterization activities that included soil sampling, well installations, well abandonment, soil vapor monitoring and groundwater monitoring. Letterle installed three (3) additional groundwater monitoring wells (MW-7, MW-8 and MW-9) and collected nineteen (19) soil samples from soil borings. The soil sample results indicated that the SHS was exceeded for benzene, toluene and naphthalene in the vicinity of the former USTs (Appendix A: Figure 3). Three (3) soil vapor monitoring points were installed adjacent to the building on the property. Residential and non-residential standards were exceeded in one of the vapor points (VP-2).

Following the submission of a Comprehensive Environmental Site Characterization report, the PADEP determined that the groundwater contamination was not delineated and required additional groundwater monitoring wells. Letterle installed MW-10 and MW-11 to delineate the groundwater plume along the southwest portion of the Site. The groundwater sample results from these wells showed that the groundwater contamination extended beyond the boundary of the property. Concentrations of benzene, naphthalene, ethylbenzene, and MTBE exceeded the respective MSCs.

Letterle installed additional wells to further delineate the groundwater contamination. Monitoring wells MW-12, MW-13, MW-14S, MW-15S, MW-16 and MW-17 were installed in December 2010. Sampling of the new monitoring wells showed that benzene and MTBE were detected in some of these wells above the SHS and the plume was not fully delineated.

An additional vapor monitoring point (VP-4) was installed at a neighboring residential property. All four of the vapor monitoring points were sampled in April and June 2010.

All analytical results from the vapor samples showed that the concentration of gasoline constituents were below the residential Soil Vapor MSC indicating that no vapor issues were present at the site property or residential property. An additional two (2) vapor monitoring points (VP-5 and VP-6) were installed due to property owner concerns at the residential property (currently the Malago property). Analytical results from these samples indicated that vapor intrusion issues were not a concern at the residential property.

Letterle conducted a pilot test to evaluate vacuum enhanced groundwater extraction (VEGE) system. Although Letterle concluded that the system would be effective, it was not implemented. Quarterly groundwater sample collection by Letterle continued until July 2012.

Copies of relevant documents from previous documents are included as Appendix C which is on a compact disk (ecopy).

5.0 GENERAL PROPERTY GEOLOGY

The Pennsylvania Department of Environmental Resources, Bureau of Topographic and Geologic Survey, *Geologic Map of Pennsylvania, 1980* indicates that the bedrock that underlies the unconsolidated material at the Site is classified as the Pennsylvanian-aged Glenshaw Formation. The Glenshaw Formation is described as cyclic sequences of shale, sandstone, red beds, and thin limestones and coals. Shale bedrock was encountered during soil boring and monitoring well installation activities at depths of 5 to 10 feet below grade.

Soil borings and excavation activities that were completed at the Property indicate that unconsolidated material is present beneath the Site, and generally consists of gravel fill, silty clays and weathered shale.

6.0 GENERAL PROPERTY HYDROGEOLOGY

6.1 GENERAL

Field and published data indicate that aquifers are present in the bedrock beneath the Property. The previously completed site characterization identified a leaky bedrock aquifer characterized by deeper water levels in monitoring wells that are screened at deeper depths. Appendix A: Figure 2 presents the locations of the monitoring wells.

The former Route 119 Amoco Property is located within an area of dissected low plateau that is characterized by rolling hills. The depth to groundwater in monitoring wells that are completed within the upper unit (MW-3, MW-10S, MW-12S, MW-13S, MW-14S, MW-15S, and MW-18S through MW-27S) ranges from approximately 4.5 feet to 15.5 feet below grade. The depth to groundwater in the monitoring wells that are completed in the lower unit (MW-4, MW-6, MW-7, MW-10, MW-12, MW-13, MW-16, and MW-17) range from approximately 12.5 feet to 44 feet below grade. Lower groundwater levels within the lower unit indicate the potential for downward migration of contaminants at the Site.

Groundwater elevation data indicate that groundwater flow beneath the Former Route 119 Amoco site is to the west and south. Appendix A: Figures 4A through 4D present Groundwater Elevation Contour Maps for the upper unit that depict the calculated groundwater relative elevations at the monitoring wells for four (4) sample collection events. Appendix A: Figures 5A and 5B present Groundwater Elevation Contour Maps for the deep bedrock unit that depict the calculated groundwater relative elevations at the monitoring wells for two (2) recent sample collection events. Appendix B: Table 1 presents a tabulated summary of the relative elevation survey data, depth to water data, and calculated groundwater relative elevation data.

6.2 RELATIVE ELEVATION SURVEY

Fayette Engineering Company, Inc., a Pennsylvania licensed surveyor, completed the survey to provide the data necessary to assess the direction of groundwater flow in the water table aquifer at and in the area of the Property. The survey provided

elevations of the top of casing and a reliable horizontal location of each well. The location and top of casing (TOC) elevation for each well was measured relative to the 1927 North American Datum (NAD27) using the State Plane Coordinate System. The TOC elevations and the measured groundwater levels in each well were then used to calculate groundwater elevations at each data point. Appendix B: Table 1 presents a tabulated summary of the elevation survey data, depth to water data, and calculated groundwater relative elevation data.

6.3 DEPTHS TO WATER

6.3.1 General

In the absence of nearby pumping wells, observed changes in the water level elevation is generally the result of seasonal fluctuations in groundwater levels as affected, primarily, by precipitation and infiltration.

Data indicate that the water table is generally more than 10 feet below grade in the area of the property building and residences. Therefore, cultural features such as basements and utility trenches are not likely to be preferential pathways for groundwater movement.

6.3.2 Shallow Aquifer

Groundwater levels were measured four (4) times during the current site characterization activities. In the shallow monitoring wells at the Property, the groundwater depths ranged from approximately 4 feet to 25 feet below grade.

6.3.3 Bedrock Aquifer

Groundwater levels were measured in the bedrock monitoring wells at the Property at depths that ranged from approximately 28 to 44 feet below grade.

6.4 DIRECTION OF GROUNDWATER FLOW

6.4.1 Lateral Groundwater Flow

6.4.1.1 Lateral Groundwater Flow in Water Table (Shallow Bedrock) Aquifer

Groundwater elevation data indicate that the direction of groundwater flow in the water table aquifer beneath the Property is southwest toward the Hi-Way Supply Road and residential property. Appendix B: Table 1 presents a tabulated summary of the elevation survey data, depth to water data, and calculated groundwater elevation data. Appendix A: Figures 4A through 4D depict the calculated groundwater elevation contours and the interpreted groundwater contours for the groundwater level measurements that were collected on June 24, 2014, August 28, 2014, June 30, 2016 and September 20, 2016, respectively.

6.4.1.2 Lateral Groundwater Flow in Zone 2 Bedrock

Groundwater elevation data indicate that the direction of groundwater flow in the deeper bedrock aquifer beneath the Property is radially away from a groundwater high located in the area of the former Amoco. Appendix B: Table 1 presents a tabulated summary of the elevation survey data, depth to water data, and calculated groundwater elevation data. Appendix A: Figures 5A and 5B depict the calculated groundwater elevation contours and the interpreted groundwater contours for the groundwater level measurements that were collected on June 24, 2014 and June 30, 2016, respectively.

6.4.2 Vertical Groundwater Flow

Groundwater elevation data collected from June 2014 through September 2016 indicate the potential for vertical movement of groundwater from the shallow aquifer to the deeper bedrock aquifer. The average potentiometric surface elevation of the water table aquifer is approximately 1219 feet above mean sea level (ft-amsl) while the average potentiometric surface elevation of the bedrock aquifer is approximately 1201 ft-amsl. This represents an average hydraulic head difference of 18 feet between the deeper bedrock aquifer and the shallow water table aquifer.

Typically, the highest concentrations of petroleum constituents in groundwater are encountered near the top of the water table aquifer (gasoline's relative density ranges from 0.71 to 0.77).

6.5 HYDRAULIC GRADIENT

The hydraulic gradient was calculated using data presented on the groundwater contour maps in Appendix A and the groundwater elevation data presented in Appendix B. The distance between monitoring wells MW-10S and MW-12S was measured on the contour map and the calculated groundwater elevation (based on field measured groundwater levels) at each well was used to calculate the hydraulic gradient.

The table below presents measured distances and calculated gradients for the four (4) dates when Site groundwater levels were recorded by Converse. Hydraulic gradient (I) = Hydraulic Head Difference (ΔH)/Distance.

HYDRAULIC GRADIENTS

Date	MW-10S Groundwater Elev. (ft)	MW-12S Groundwater Elev. (ft)	Approximate Distance (ft)	Hydraulic Gradient (I)
6/24/14	1229.48	1221.96	100	0.075
8/28/14	1228.82	1219.82	100	0.09
6/30/16	1227.81	1212.92	100	0.15
9/20/16	1225.71	1211.77	100	0.14
			Average	0.11

6.6 HYDRAULIC CONDUCTIVITY

Letterle performed slug tests at the site in 2006. Rising head slug tests were performed on monitoring wells MW-3, MW-8 and MW-9. The predicted hydraulic gradient for monitoring well MW-3 was three orders of magnitude higher than the calculated hydraulic conductivity for MW-8 and MW-9. Although Letterle dismissed the data from MW-3, the very low conductivity values for MW-8 and MW-9 are inconsistent with the size of the impacted groundwater plume. A hydraulic conductivity for MW-3 of 1.26 feet/day was used as an initial estimate for the evaluation of contaminant fate and

transport. Calibration of the model to contaminant data indicates a hydraulic conductivity at the site of approximately 0.25 feet per day.

7.0 SITE CHARACTERIZATION ACTIVITIES

7.1 GENERAL

The Site Characterization field activities included the following primary tasks:

1. Completion of a Site-Specific Health and Safety Plan.
2. Installation and development of thirteen (13) additional shallow bedrock groundwater monitoring wells (monitoring wells MW-10S, MW-12S, MW-13S, MW-18S, MW-19S, MW-20S, MW-21S, MW-22S, MW-23S, MW-24S, MW-25S, MW-26S, and MW-27S) on the property and adjacent properties to further assess the extent of the impacted groundwater plume. The groundwater monitoring wells were installed to depths of approximately 30 feet below grade (fbg) and were generally screened across the water table that was encountered during drilling.
3. Completion of four (4) rounds of additional Site Characterization groundwater sample collection.
4. Development of an updated site conceptual model.
5. Compilation and submission of this Supplemental Site Characterization Report (SSCR) and Revised Remedial Action Plan (RRAP).

Appendix A: Figure 2 presents the groundwater monitoring well locations. Eichelbergers, Inc. of Mechanicsburg, Pennsylvania provided the drilling installation services for the monitoring wells. Converse representatives directed and supervised drilling and installation activities. Converse personnel conducted all sample collection activities and operated portable field instruments to screen for organic vapors in the soil samples and in the work area. All decontamination, sample collection, and other activities that were conducted by Converse or subcontracted personnel were conducted in accordance with accepted protocols.

7.2 HEALTH AND SAFETY PLAN

A site-specific Health & Safety Plan that complies with Occupational Safety and Health Administration (OSHA) 29 CFR Part 1910.120 was completed prior to the initiation of field activities and was utilized at the Property during all field activities.

7.3 SAMPLE COLLECTION AND ANALYSIS

7.3.1 General

Groundwater samples that were collected as part of site characterization activities were analyzed for the unleaded gasoline indicator compounds and by the analytical methods that are published in the PADEP *Technical Document 2530-BK-DEP2008: Closure Requirements for Underground Storage Tank Systems, Effective April 1, 1998* (*1998 UST Technical Document*) unless otherwise noted.

Field and laboratory QA/QC protocol was consistent with PADEP protocol and with those that are published in the United States Environmental Protection Agency (USEPA) document titled *Solid Waste, Test Methods for Evaluating Solid Waste (EPA Manual SW-846)*. One (1) trip blank and one (1) duplicate sample were generally submitted with each sample set analyzed to provide quality assurance.

Nitrile disposable gloves were worn during sample collection activities and were changed prior to the collection of each sample. Each sample was given a unique identification number that was recorded on the field log, the Chain of Custody record, and the sample label.

All samples were placed in a cooler and chilled with ice for shipment to the analytical laboratory. All samples remained in the possession of Converse personnel until transferred to the analytical laboratory or to a courier for delivery to the analytical laboratory. Chain of Custody documentation was completed for and attended each sample set.

Single-use bailers were used to collect the groundwater samples. Decontamination of these materials was, therefore, not necessary. The submersible pump used to purge

the wells was decontaminated between wells using an alconox wash and distilled water rinse.

7.3.2 Monitoring Well Construction and Development

Eight (8) additional groundwater monitoring wells were installed in the unconsolidated overburden at on- and off-property locations to assess the extent of impacted groundwater in May 2014. Five (5) monitoring wells (MW-12S, MW-13S, MW-19S, MW-20S, and MW-21S) were installed on, and in the field behind, the Malago property for the purpose of delineating the western extent of the contamination plume. MW-10S, MW-18S and MW-22S were installed on the Former Route 119 Amoco Property. Following the sampling of these wells, it was concluded that the contaminant plume was not fully delineated and additional monitoring wells would be required.

In June 2016, an additional five (5) monitoring wells were installed. Four monitoring wells were installed off-property to the west (MW-23S, MW-24S, MW-25S and MW-26S) and one monitoring well (MW-27S) was installed on the Former Route 119 Amoco Property. All wells were completed using a Geoprobe equipped with hollow stem augers, and an air-rotary hammer system. At each monitoring well location, two-inch diameter by 2-feet long, spilt-spoon samplers were used to collect soil samples continuously from grade to the bottom of the unconsolidated overburden.

The wells were constructed similar to the requirements that are described in the PADEP 383-3000-001: *Pennsylvania Groundwater Monitoring Guidance Manual, December 1, 2001* (*2001 GM Guidance Manual*) and *ASTM Standard D 5092-04*. The monitoring wells were completed to depths of approximately 30 feet below grade and the wells were screened across the water table with 2-inch diameter, Schedule 40, 0.010-inch factory slotted, flush threaded, PVC screen. The borehole above the screened interval was cased with 2-inch diameter, Schedule 40, flush threaded PVC riser. The annular space between the borehole and the well screen was filled with U.S. Silica FilPro #2 equivalent sand to approximately 1 foot above the screened interval. The remaining annular space was filled with bentonite and concrete. The

monitoring wells were secured with an expandable locking cap and padlock and completed at the surface with a flush-mount, bolt-down, water-tight, manhole. Appendix D: Well Logs presents a summary of well construction and a description of the materials encountered and the field screening results logged during the installation of the monitoring wells.

The monitoring wells were developed by Converse personnel to remove fine-grained material and to initiate hydraulic communication with the aquifer. The monitoring wells were developed using a direct current (DC) submersible 1.5 inch diameter Whale® (model #921) pump with a booster (inline mounted Whale® pump) and a 0.5-inch diameter polyethylene discharge line capable of pumping approximately two (2) gallons per minute (GPM) (depth dependent) consistent with the PADEP 2001 Guidance Document. Each well was purged for approximately ten (10) minutes with intermittent surging (vertical movement of the pump over a distance of 2 to 3 feet within the well during development pumping). Development of each well was terminated when the purge water had little to no turbidity.

Converse personnel field monitored the development water for indications of groundwater contamination. Potentially impacted development water was treated on-site using granular activated carbon and discharged to the ground surface in the vicinity of the well.

7.3.3 Groundwater Samples

7.3.3.1 Water Level Gauging and Groundwater Sample Collection

Water levels were collected from the Site monitoring wells during each of the groundwater sampling events. The groundwater elevations were collected on June 24, 2014, August 28, 2014, June 30, 2016 and September 20, 2016. The groundwater levels are summarized on Table 1 of Appendix B.

In June 2014, a complete round of groundwater samples were collected from the existing wells. Groundwater samples were collected from monitoring wells MW-3, MW-4, MW-6, MW-7, MW-8, MW-10, MW-10S, MW-12, MW-12S, MW-13, MW-13S, MW-

14, MW-15S, MW-16, MW-17, and MW-18S through MW-22S. In August 28, 2014, groundwater samples were collected from the newly installed wells (MW-10S, MW-12S, MW-13S, and MW-18S through MW-22S).

During the June 2016 groundwater sampling event, groundwater samples were collected from MW-3, MW-6, MW-7, MW-8, MW-10, MW-10S, MW-12, MW-12S, MW-15S, MW-16, and MW-18S, MW-19S, MW-20S, and MW-22S through MW-27S. Several of the monitoring wells had been removed or covered. Monitoring wells MW-13, MW-13S, MW-14, MW-17 and MW-21S were reportedly removed during the installation of a sewer line by Dunbar township. Monitoring well MW-4, located on the property, was covered by a pile of gravel and was not accessible. MW-11 was covered by vehicles and was not accessible during any of the groundwater sampling events.

In September 2016, the wells installed in June 2016 were sampled. These wells included MW-23S through MW-27S.

Prior to sample collection, groundwater levels were measured at each monitoring well and the respective saturated casing volumes were calculated. Each well was then purged of at least three (3) saturated casing volumes or until all standing water was evacuated from the well prior to sample collection. The monitoring wells were purged and sampled using a peristaltic pump and disposable tubing. The temperature, dissolved oxygen content, specific conductivity, and pH of the purge water were monitored at the beginning and end of each purge event. Potentially impacted purge water was treated on-site using granular activated carbon and discharged to the ground surface in the vicinity of the wells. Single-use disposable bailers were used to collect groundwater samples from the wells and the water samples were transferred directly into laboratory supplied glassware. Groundwater samples collected for VOC analysis were transferred to 40 milliliter (mL) VOA vials and preserved with hydrochloric acid (HCL).

Separate phase liquid (SPL) was observed in MW-12S during the August 28, 2014, June 30, 2016 and September 20, 2016 groundwater sample collection activities.

During the June 2016 sampling event, 0.08 feet of SPL was observed in MW-12S and in September 2016, 0.28 feet of SPL was observed.

7.3.3.2 Laboratory Analysis

7.3.3.2.1 General

As previously discussed, groundwater sample collection events (GSCEs) at the Former Route 119 Amoco facility were conducted on June 24, 2014, August 28, 2014, June 30, 2016 and September 20, 2016.

All samples were analyzed for the unleaded gasoline constituents that are specified on the 1998 petroleum short list. Specifically, the samples were analyzed for benzene, toluene, ethylbenzene, total xylenes, isopropylbenzene, methyl tert-butyl ether (MTBE), and naphthalene.

No compound was identified in a trip blank at a concentration greater than the LQL. The LQLs for all compounds were less than the PQLs.

7.3.3.2.2 June 2014 Sampling Event

Concentrations of petroleum constituents exceeded the RMSC SHSs in groundwater samples that were collected from monitoring wells MW-3, MW-10S, MW-12, MW-12S, MW-13, MW-13S, MW-14, MW-15S, MW-18S, MW-19S, MW-20S, MW-21S and MW-22S. The following exceedances were detected in the shallow bedrock aquifer wells during this sampling event:

Well	Benzene	Ethylbenzene	Xylenes	MTBE	Naphthalene
MW-10S	164	--	--	--	196
MW-12S	751	938	--	90.5	558
MW-13S	188	--	--	40.7	172
MW-15S	26.9	--	--	--	--
MW-18S	984	878	1,120	310	365
MW-19S	23.5	--	--	167	--

MW-20S	29	--	--	114	--
MW-21S	9.4	--	--	--	--
MW-22S	1280	--	--	154	163

Notes: '—' indicates that the RMSC SHS was not exceeded for this analyte
All concentrations in micrograms per liter (µg/L)

Exceedances of the respective MSC were detected in the following deep bedrock wells:

Well	Benzene	Ethylbenzene	Xylenes	MTBE	Naphthalene
MW-3	5.1	--	--	--	--
MW-12	163	--	--	186	--
MW-13	38.8	--	--	34.6	--
MW-14	150	--	--	29.7	--

Laboratory reports and chain of custody data are presented in Appendix E. Appendix B: Table 2 summarizes the groundwater analytical data. Appendix A: Figures 6A and 6B present the locations of the monitoring wells and isoconcentration maps for benzene and MTBE in the shallow bedrock aquifer, respectively, for the June 2014 sampling event.

7.3.3.2.3 August 2014 Sampling Event

During the August 2014 sampling event, samples were collected from the wells installed in May 2014. All of the wells sampled during this event were screened in the shallow bedrock aquifer. Concentrations of petroleum constituents exceeded the RMSC SHSs in groundwater samples that were collected from monitoring wells MW-10S, MW-12S, MW-13S, MW-18S, MW-19S, MW-20S, and MW-22S. MW-21S was sampled and all concentrations of contaminants were below the LQL. The LQLs for all compounds were less than the promulgated RMSC SHSs.

The following exceedances were detected during the August 2014 sampling event.

Well	Benzene	Ethylbenzene	Xylenes	MTBE	Naphthalene
MW-10S	658	--	--	54.9	256
MW-12S	2,050/852	787/801	--	123/102	381/411
MW-13S	599	740	--	74.1	206
MW-18S	554	884	2,600	134	206
MW-19S	10.4	--	--	--	--
MW-20S	15.3	--	--	75.1	--
MW-22S	585	--	--	163	147

Notes: Two (2) values reported for MW-12S include a duplicate sample.
"—" indicates that the RMSC SHS was not exceeded for this analyte.
All concentrations in µg/L.

Laboratory reports and chain of custody data are presented in Appendix E. Appendix B: Table 2 summarizes the groundwater analytical data. Contaminant distribution maps were not prepared for this sampling event because of the limited sampling.

7.3.3.2.4 June 2016 Sampling Event

The following monitoring wells were sampled in June 2016: MW-10S, MW-12, MW-12S, MW-15S, MW-16, MW-18S, MW-19S, MW-20S, MW-22S through MW-27S, and the pond located west of the property. No concentrations of constituents in the pond sample were above the LQL.

The following exceedances of the respective RMSC were detected in shallow bedrock aquifer samples collected in June 2016.

Well	Benzene	Ethylbenzene	Xylenes	MTBE	Naphthalene
MW-10S	142	--	--	--	68
MW-12S	972	--	--	121	--
MW-15S	236	--	--	113	--
MW-18S	231	--	--	60.2	177
MW-19S	39.4	--	--	64.3	--
MW-20S	65.4	--	--	119	--

MW-22S	110	--	--	30.5	--
MW-24S	--	--	--	25.9	--
MW-26S	6	--	--	--	--
MW-27	--	--	--	27.8	

Deep bedrock monitoring wells sampled in June 2016 included MW-12 and MW-16. No constituents were detected above the LQL in MW-16. Concentrations of benzene (163 mg/L) and MTBE (186 mg/L) in MW-12 exceeded their respective RMSC during this sampling event.

Laboratory reports and chain of custody data are presented in Appendix E. Appendix B: Table 2 summarizes the groundwater analytical data. Appendix A: Figures 7A and 7B present the locations of the monitoring wells and isoconcentration maps for benzene and MTBE in the shallow bedrock groundwater, respectively, for the June 2016 sampling event.

7.3.3.2.5 September 2016 Sampling Event

The following monitoring wells were sampled in September 2016: MW-23S through MW-27S, and the pond located west of the property. No concentrations of constituents in the pond sample were above the LQLs.

The only exceedance of the RMSC detected in the groundwater samples from September 2016 was MTBE at a concentration of 20.2 μg/L in MW-24S.

Laboratory reports and chain of custody data are presented in Appendix E. Appendix B: Table 2 summarizes the groundwater analytical data.

7.3.3.2.6 Groundwater Analytical Data Evaluation

The laboratory results indicate that petroleum constituents in the groundwater are present beneath the Property and beyond the property boundary to the southwest at levels that exceed the RMSC SHSs.

Benzene and MTBE are the most commonly detected contaminants above the RMSC. The highest concentrations of contaminants are located on the south and west side of the former Amoco property and on the Malago property in the area of MW-12S and MW-13S. LNAPL has been detected in MW-12S.

Concentrations of contaminants in the shallow bedrock aquifer on the property generally decreased between 2014 and 2016. In MW-10S, the concentrations of benzene decreased from a high of 658 μg/L to 142 μg/L between August 2014 and June 2016, and the concentrations of naphthalene decreased from a high of 256 μg/L in August 2014 to 68 μg/L in June 2016. In MW-18S, concentrations of benzene decreased from 984 μg/L in June 2014 to 231 μg/L in June 2016. Concentrations of naphthalene decreased from 365 μg/L to 177 μg/L between June 2014 and June 2016 in MW-18S. In June 2014, the concentration of total xylenes in MW-18S was 1120 μg/L; these concentrations decreased to below the LQL in June 2016. The concentration of MTBE also decreased between 2014 and 2016, with a concentration of 310 μg/L in June 2014 to 60.2 μg/L in June 2016. In MW-22S, the concentrations of benzene decreased from 1280 μg/L in June 2014 to 110 μg/L in June 2016, and the concentrations of naphthalene decreased from 163 μg/L to below the LQL over this same period. Concentrations of MTBE also decreased over this period in MW-22S from 154 μg/L in June 2014 to 27.8 μg/L in June 2016.

The other area of high contaminant concentrations is located on the residential property west of the site and Hi-Way Supply Road. Concentrations of benzene and MTBE in MW-12S on the residential property increased between 2014 and 2016. The concentrations of benzene were 751 μg/L in June 2014 and 972 μg/L in June 2016. The concentration of MTBE in June 2014 was 90.5 μg/L and increased to 121 μg/L in June 2016. The concentrations of ethylbenzene and naphthalene decreased over this period from 938 μg/L for ethylbenzene and 558 μg/L for naphthalene to below the LQL in June 2016.

7.3.4 Waste Disposition

Soil cuttings that were generated during the completion of the monitoring wells were containerized in drums and removed from the site for disposal by EAP Industries, Inc.

Purge water from potentially impacted groundwater monitoring wells was containerized for off-property treatment and disposal.

8.0 SITE CONCEPTUAL MODEL

8.1 SOURCE AND EXTENT

A release of product from former UST systems that were used to store unleaded gasoline systems was detected at the Site in 1996. The majority of contaminated soil from the area of the release and the former UST system was excavated and removed from the Property in 2005. Since the remedial excavations were completed, unleaded gasoline constituents have continued to be identified in isolated soil samples at levels that exceed the RMSC SHSs (Figure 3).

The release of product impacted the bedrock aquifer beneath the Property. Groundwater within the shallow bedrock aquifer flows to the west and southwest. Current and historical groundwater data indicates that the extent of impacted groundwater that exceeds the RMSC SHSs extends beyond the western property boundary. The impacted groundwater extends beneath Hi-Way Supply Road and beneath residential property, commercial property, and undeveloped property located south and west of the Former Amoco property.

The impacted groundwater at the Site is located south and west of the former USTs. The distribution of impacted groundwater indicates that the source area for the current groundwater plume is residual contaminants in soil, shallow bedrock, and groundwater.

Groundwater monitoring wells on the Former Amoco Property that are completed within both the shallow bedrock and the deeper (Zone 2) bedrock aquifer have been impacted by the release of unleaded gasoline.

8.2 CONSTITUENTS OF CONCERN

The following unleaded gasoline indicator compounds are considered to be the constituents of concern (COCs) at the Property:

CONSTITUENTS OF CONCERN (COCs)	
CONSTITUENTS	**CASRN**
Benzene	71-43-2
Cumene	98-82-8
Ethylbenzene	100-41-4
Methyl Tert-Butyl Ether (MTBE)	1634-04-4
Naphthalene	91-20-3
Toluene	108-88-3
Xylene	1330-20-7

8.3 PLUME CONFIGURATION, CONTAMINANT DISTRIBUTION, AND PLUME STABILITY

Petroleum constituents have been detected in groundwater at the Property since 1996. Recent groundwater sampling results show a similar distribution of contaminants at the Property to those detected during the historical site characterization. The highest concentrations of contaminants are located south of the former USTs on the property and west of the property beyond Hi-Way Supply Road on the residential (Malago) property. Monitoring wells are located at distances that range from approximately 0 to 600 feet from the former UST system area (source area). Groundwater analytical data for the newly installed monitoring wells indicate that the extent of impacted groundwater in the water table aquifer has been delineated. Insufficient groundwater sampling events have been completed from the newest monitoring wells to assess plume stability at the distal end of the plume, however based on the age of the release and the chemical properties of the petroleum constituents, the

plume is expected to be stable or shrinking. Refer to Appendix A: Figure 8 for an extended site map.

As presented in Appendix A: Figures 4A through 4D, the lateral direction of groundwater flow within the upper unit (shallow bedrock aquifer) across the Former Route 119 Amoco Property is to generally to the southwest. Data indicate that the direction of groundwater flow in the bedrock aquifers is controlled by secondary porosity in the form of fractures or fracture zones within the shale and siltstone.

Unleaded gasoline from former USTs is the source of the COCs at the Property. The specific density of petroleum products, except for bunker oil (not a source at this Property), is less than water (floats on water). In almost all cases, a decreasing vertical constituent gradient in groundwater results from a release of a petroleum product. Constituent concentrations in the Zone 2 (deeper aquifer) monitoring wells indicate that contaminant concentrations decrease with depth. Water levels indicate that the bedrock beneath the site is a leaky aquifer located with a groundwater recharge area.

Historical and current data indicate:

1. The primary surface water discharge boundary in the area of the Site is believed to be an unnamed intermittent tributary of Gist Run which is located approximately 1000 feet southwest west of the property. A pond is located approximately 900 feet west of the property that receives some of the flow from the area of the Site.
2. No distinct confining unit was evident in the subsurface that was evaluated by this study.
3. The overburden consists mostly of clay mixed with varying degrees of silt and sand. Bedrock was encountered at a depth of approximately 10 feet below grade.

4. The water table is located at elevations generally below the known depth of cultural features such as basements and utility trenches.

Refer to the Fate and Transport Evaluation in Appendix F for additional information.

9.0 PATHWAY EVALUATION/BASELINE RISK

9.1 GENERAL

Once a potential completed exposure pathway has been identified in the site conceptual model, site-specific information and data that demonstrate that an exposure will not occur (i.e., the exposure pathway is incomplete) are required before the exposure pathway can be removed from further consideration. The exposure route can be eliminated using quantitative sample collection and analysis, fate and transport analysis, engineering controls, and/or institutional controls.

9.2 FATE AND TRANSPORT SUMMARY

9.2.1 General

PADEP, 2002: Section IV.A states that "fate and transport analysis or modeling is a necessary part of site characterization and demonstrating attainment of an Act 2 standard. However, the regulations governing Act 2 use the term 'fate and transport analysis' as opposed to 'fate and transport model'. This particular distinction was made because it will not always be necessary to run an analytical or numerical quantitative 'fate and transport model' to achieve a standard."

9.2.2 Fate and Transport in Unsaturated Soil Zone

2002 LRP TGM: Section IV(1)(a) identifies that fate and transport analysis should be conducted for the unsaturated zone if constituents in the unsaturated zone are identified at concentrations greater than the Soil to Groundwater Numeric Value (SGNV) MSC SHS. In general, soil samples with concentrations that exceed the NRMSC SHSs were detected at depths at or below the water table. Any constituent concentrations that still exist within the unsaturated zone after 20 years are unlikely to migrate under steady state conditions.

9.2.3 Fate and Transport Saturated Soil Zone

The *2002 LRP TGM*: Section IV(A)(2) provides guidance for fate and transport analysis in the saturated zone if constituents in the saturated soil are identified at concentrations greater than the MSC SHS. Fate and transport models usually evaluate constituent

fate and transport in saturated soil as a function of constituent fate and transport in groundwater at the source area.

9.2.4 Fate and Transport in Groundwater

A qualitative analysis of fate and transport indicates considerable mobility of constituents. The dissolved phase plumes that travel the greatest distance are benzene and MTBE. As the release is more than 20 years old, the plume of dissolved phase constituents is expected to be stable or shrinking. A numerical fate and transport analysis is included in Appendix F.

The New Quick Domenico Model was used to simulate contaminant migration within the shallow bedrock aquifer. Although flow occurs within bedrock, the conceptual model of flow at the site is consistent with the assumptions and limitations of the New Quick Domenico Model. Measured hydraulic parameters, contaminant data and best estimates of physical parameters were used as input to the simulations. The simulations were calibrated with downgradient contaminant data. Maximum concentrations that were detected within the past three years were used to predict the 'worst case' extent of the contaminant plume.

Specifically, the model predicts that the constituents will migrate the following maximum distances at concentrations that exceed the SHSs:

Constituent	Aquifer	Distance
Benzene	Shallow Bedrock	360 feet from MW-12S
MTBE	Shallow Bedrock	230 feet from MW-18S

The data indicate that the plumes have not and will not migrate to the nearest surface water bodies.

9.2.5 Fate and Transport in Surface Water

No point source discharge to surface water or diffuse surface water discharge to surface water from springs is present at the Site.

Historical groundwater analytical data and the groundwater fate and transport analysis indicate that the COCs will not reach the nearest downgradient surface water body at a level that exceeds RMSC SHSs or any applicable regulatory criteria.

9.2.6 Fate and Transport to Indoor Air

See Section 11.3.3.

9.3 ENGINEERING AND INSTITUTIONAL CONTROLS

9.3.1 Engineering Controls

Act 2 defines an engineering control as a remedial action directed exclusively toward containing or controlling the migration of regulated substances through the environment, and includes, but is not limited to, slurry walls, liner systems, caps, leachate collection systems, and groundwater recovery trenches.

Current information indicates that engineering controls will not be required.

9.3.2 Institutional Controls

Act 2 defines an institutional control as a measure that is taken to limit or prohibit certain activities that may interfere with the integrity of a remedial action or result in exposure to regulated substances at a site, and include, but are not limited to, fencing or restrictions on the future use of the site (deed restriction).

Future use of groundwater at the Site and adjacent properties will be addressed as an institutional control via an environmental covenant. Future construction of inhabited structures in the area of impacted media will require vapor mitigation systems or proof that such systems are not required.

9.4 EXPOSURE PATHWAY EVALUATION

9.4.1 Environmental Media of Concern

An evaluation of potentially affected media is presented in the following table.

ENVIRONMENTAL MEDIA OF CONCERN	ACTIVE	NOT ACTIVE	COMMENTS
Sediment		✓	Sediment is not present at Site.
Surface Soil		✓	No impacted surface soil is known to be present at Site.
Subsurface Soil	✓		Impacted subsurface soil is known to be present at Site.
Groundwater	✓		COCs in groundwater at concentrations greater than the RMSC SHS and NRMSC SHS.
Surface Water		✓	Not currently impacted by COCs.

9.4.2 Potential Transport Pathways

The migration pathway is the course through which contaminants in the environment may move away from the source to potential environmental receptors. The potential transport pathways are evaluated on the following table.

POTENTIAL TRANSPORT PATHWAYS	ACTIVE	NOT ACTIVE	COMMENTS
Transport of COCs in sediment		✓	Sediment is not known to be an affected media.
Airborne transport of surface soil (dust)		✓	Surface soil is not known to be an affected media.
Volatilization of COCs from surface soil to indoor air.		✓	Surface soil is not known to be an affected media.
Volatilization of COCs from surface soil to outdoor air.		✓	Surface soil is not known to be an affected media.
Volatilization of COCs from subsurface soil to indoor air.		✓	Soil vapor assessment indicated that pathway is not active.
Volatilization of COCs from subsurface soil to outdoor air.		✓	Soil vapor assessment indicated that pathway is not active.
Leaching of COCs from subsurface soil to groundwater.	✓		Active pathway at site.
Volatilization of COCs from SPL to indoor air.	✓		Separate phase liquid (SPL) is present.
Volatilization of COCs from SPL to outdoor air.	✓		SPL is present.
COCs in SPL to dissolved phase in groundwater.	✓		SPL is present.
Migration of COCs in groundwater.	✓		COCs in groundwater at concentrations greater than RMSC SHSs and NRMSC SHSs.
Volatilization of COCs from groundwater to indoor air.		✓	Soil vapor assessment indicated that pathway is not active.
Volatilization of COCs from		✓	Soil vapor assessment indicated that pathway

POTENTIAL TRANSPORT PATHWAYS	ACTIVE	NOT ACTIVE	COMMENTS
groundwater to outdoor air.			is not active.
Migration of COCs in surface water.		✓	No known discharge from groundwater and subsequent COC transport in surface water.

9.4.3 Potential Routes of Exposure

An exposure route is the process by which a contaminant or physical agent in the environment comes into direct contact with the body, tissues or exchange boundaries of an environmental receptor organism, for example, ingestion, inhalation, and dermal absorption. Potential exposure routes include:

POTENTIAL ROUTES OF EXPOSURE	ACTIVE	NOT ACTIVE	COMMENTS
Direct contact* to COCs in sediment		✓	Sediment is not known to be an affected media.
Direct contact* to COCs in dust from surface soil		✓	Surface soil is not known to be an affected media.
Direct contact* to COCs in subsurface soil		✓	Subsurface soil is impacted, however the impacted media is at greater than 9 feet below grade. The impacted area is covered with asphalt.
Direct contact* to COCs in groundwater	✓		Potable water for all properties at the Site is currently supplied by a public water supply system. No current use of groundwater was identified at the Site. Groundwater is approximately 10 feet below grade. No probable future use of groundwater at or in the general area of the Site is reasonably foreseeable due to current development of the area. Future contact to water will need to be addressed in a covenant.
Direct contact* to COCs in surface water		✓	No surface water at Site. Fate and transport analysis indicates that COCs will not reach the nearest surface water body.
Direct contact* to Non-Media solid		✓	Non-Media solid is not indicated at Site.
Inhalation of indoor air	✓		Soil vapor assessment indicated that pathway is not active. Recent detection of SPL near residence indicates that further evaluation is required.

POTENTIAL ROUTES OF EXPOSURE	ACTIVE	NOT ACTIVE	COMMENTS
Inhalation of outdoor air		✓	Soil vapor assessment indicated that pathway is not active.
Direct contact* to soil in an excavation	✓		Subsurface soil in the saturated zone is impacted.
Direct contact* to groundwater in an excavation	✓		COCs in groundwater at concentrations greater than RMSC SHSs and NRMSC SHSs are present.
Direct contact* to SPL in an excavation	✓		SPL is present.

*Direct contact: ingestion and/or dermal absorption.

9.4.4 Potential Receptors

An evaluation of the potential human receptors based on the identified current use of the Site and adjoining properties is presented in the following table:

POTENTIAL RECEPTOR	ACTIVE	NOT ACTIVE	COMMENTS
Residential	✓		Residential buildings are above the impacted groundwater plume that exceeds RMSC SHS.
Commercial/Industrial Worker	✓		Commercial use of the Property and adjacent properties.
Construction Worker	✓		Future construction activities at the Site are likely.
Visitor		✓	Exposure rates for visitors are considered to be of short duration, incidental, and difficult to quantify. Risk would be conservatively assessed by r commercial/industrial worker receptor exposure assessment.
Trespass		✓	Exposure rates for trespass are considered to be of short duration, incidental, and difficult to quantify. Risk would be conservatively assessed by residential and commercial/industrial worker receptor exposure assessment.
Recreational		✓	Property used for commercial purposes. Adjoining properties used for commercial or residential purposes. Fate and transport analysis indicates that COCs will not reach the nearest surface water body.

9.5 POTENTIAL COMPLETE EXPOSURE PATHWAY IDENTIFICATION AND ELIMINATION SUMMARY

The following tables present the potential complete exposure pathways that were identified based on the affected media (sources), migration pathways, exposure routes, and receptors that are identified in the Site Conceptual Model (Section 7) and the site-specific data that were used to eliminate the potential complete exposure pathways.

POTENTIAL COMPLETE EXPOSURE PATHWAY IDENTIFICATION AND ELIMINATION			
POTENTIAL COMPLETE EXPOSURE PATHWAY	**COMPLETE**	**INCOMPLETE**	**COMMENTS**
Migration of COCs as a result of groundwater flow, and ingestion/ inhalation/dermal absorption of groundwater as a water supply by human receptors.		✓	Current data indicate that potable water supplies are not impacted. Fate and transport analysis indicates that existing potable supplies will not be impacted in the future. Institutional controls will be used to preclude future exposure.
Migration of COCs as a result of groundwater flow, subsequent discharge to designated use surface water, and ingestion of surface water as a water supply by human receptors and/or direct contact to COCs in surface water (includes dermal absorption, incidental ingestion, and inhalation of vapors) and exposure of recreational users and aquatic life.		✓	Current data indicate that surface water is not impacted. Fate and transport analysis indicates that surface water will not be impacted in the future.
Volatilization of COCs from the groundwater, subsurface soil, or SPL to indoor air and inhalation exposure of residents, commercial, or industrial workers.	✓		Previous soil vapor assessment indicated that the pathway was incomplete. Based on detection of SPL additional assessment will be conducted using new Vapor Intrusion Guidance.
Volatilization of COCs from the groundwater, subsurface soil, or SPL to outdoor air and inhalation exposure of residents, commercial, or industrial workers.		✓	Previous soil vapor assessment indicated that the pathway was incomplete.
Direct contact* with COCs in groundwater, subsurface soil, or SPL by Site construction workers in an excavation.		✓	Not a current exposure pathway. Institutional controls will be used to manage future exposure.

*Direct Contact: ingestion, inhalation, and dermal absorption.

9.6 COMPLETE EXPOSURE PATHWAYS

As presented in preceding sections, it is our opinion that the evaluation presented in Section 10 identified no current or future complete exposure pathway at the Site with the exception of potential vapor issues that can be further evaluated and mitigated or managed. A risk assessment was not completed as allowed by §250.405(b).

10.0 REMEDIAL ALTERNATIVES ANALYSIS

10.1 GENERAL

The release is more than 20 years old. Recent groundwater sampling results show a similar distribution of contaminants at the Property to those detected during the historical site characterization. The highest concentrations of contaminants are located south of the former USTs on the property and west of the property beyond Hi-Way Supply Road on the residential (Malago) property. Monitoring wells are located at distances that range from approximately 0 to 600 feet from the former UST system area (source area). Groundwater analytical data for the newly installed monitoring wells indicate that the extent of impacted groundwater in the water table aquifer has been delineated. Insufficient groundwater sampling events have been completed from the newest monitoring wells to assess plume stability at the distal end of the plume, however based on the age of the release and the chemical properties of the petroleum constituents, the plume is expected to be stable or shrinking.

Current data indicates that remedial measures will not be required to protect the potential receptors unless further evaluation of the vapor pathway indicates that mitigation is required. As the plume has migrated more than 400 feet beyond the property boundary and attainment of the SSS is being pursued, remedial measures will only be employed to stabilize concentrations and protect current or future receptors. Remedial alternatives are discussed in this Section that may be utilized to facilitate the demonstration of the selected standards.

10.2 REMEDIAL TECHNOLOGIES

10.2.1 Excavation and Off-Site Disposal of Soil

Excavation and off-site disposal of petroleum impacted soil is usually the most cost effective solution for small and easily accessible releases to soil. The soil can generally be disposed of at a nearby permitted landfill or soil recycling facility. The removal of the soil source area can in some instances cause a rapid reduction of the impacted groundwater plume.

A limited amount of soil was removed during UST closure activities. Based on previously collected soil samples, the area of soil that currently exceeds standards is of limited extent. As the vast majority of impacted media is within saturated soil and bedrock, the removal of a limited volume of soil would not provide a significant benefit. Excavation and removal of residual impacted soil is not currently retained as a viable remedial alternative.

10.2.2 Groundwater Pump and Treat

Groundwater pump and treat is an effective means of establishing hydraulic control over impacted groundwater plumes and targeting specific zones of groundwater recovery. Although it is effective in establishing control over a plume, pumping large volumes of water over a period of many years is typically required to produce a significant reduction in contaminant concentrations within the plume.

The low hydraulic conductivities and nature of the aquifer (fractured bedrock) would make pump and treat technologies a poor choice for the Site unless they are combined with other technologies. Groundwater and pump and treat is not retained as a viable remedial alternative unless it is incorporated with other technologies.

10.2.3 Air Sparging

Air sparging uses compressed air or oxygen that is injected below the water table to strip volatile contaminants from the adjacent soil and groundwater. The oxygen introduced into the aquifer provides the added benefit of stimulating natural biodegradation that is typically oxygen limited within soil impacted by petroleum

compounds. The contaminated soil vapor is extracted above the water table and treated ex-situ. Ex-situ treatment of the petroleum impacted vapor is usually completed using granular activated carbon (GAC). Air sparging is often limited by the presence of low permeability strata.

The fractures that comprise the upper bedrock aquifer would make air sparging difficult to predict and control. Air sparging is not retained as a viable remedial technology.

10.2.4 Oxygen Enhancements

In the presence of sufficient oxygen and nutrients, naturally occurring organisms are capable of degrading significant volumes of petroleum constituents. Several methods can be used to increase the oxygen content of the impacted media. These methods include biosparging (similar to air sparging but at lower velocities that do not strip off volatiles) and various oxygen releasing compounds that are commercially available to enhance biodegradation. In some settings, hydrocarbon degrading organisms must also be introduced into the impacted media to increase the rate of biodegradation to an acceptable level. Biodegradation “cocktails” that include nutrients, oxygen source, and petroleum degrading bacteria are commercially available. Designing an efficient means of distributing the enhancements throughout the impacted media can be a challenge in some geologic settings. One (1) advantage to these technologies is that no ex-situ treatment of contaminants is required. Pilot scale studies and/or microcosm studies are often recommended to increase the likelihood of success.

The nature of the shallow bedrock aquifer would make the distribution of oxygen enhancements a challenge. Oxygen enhancements are not currently retained as a viable remedial technology at this Site.

10.2.5 Dual-Phase/Multi-Phase Extraction

Dual-phase extraction (DPE) involves the simultaneous extraction of impacted water and soil vapor using a moderate to high vacuum blower or liquid ring pump. In certain cases, the liquid and vapor may be extracted using separate pumps and/or blowers. Extraction of the soil vapor and water together promotes the stripping off of volatiles into

the vapor phase which can then be treated more efficiently using GAC or an alternative technology. Dual-phase extraction is one of the few technologies that can be used effectively in low permeability strata. Dual-phase extraction has proven to be particularly effective in shallow low permeability aquifers that are located beneath pavement or another low permeability cover. The system can also be used to pump warm air into the ground to promote the degradation of less volatile (naphthalene, cumene) petroleum constituents. In high permeability strata and large applications the cost of equipment and the volume of water generated become problematic.

The depth to groundwater and the fractured bedrock would make the efficacy of dual phase extraction difficult to predict. Dual-phase extraction is not retained as a viable remedial technology.

10.2.6 In-Situ Chemical Oxidation

In-Situ Chemical Oxidation (ISCO) involves the introduction of a strong oxidizing agent (permanganate, ozone, hydrogen peroxide/fenton, persulfate, etc.) into the impacted media to chemically break down contaminants into less harmful constituents. ISCO is often used with recalcitrant compounds that are not easily addressed with other remedial technologies. One advantage of ISCO is that it generally acts on the order of weeks to months to rapidly reduce contaminant concentrations. As the destruction of contaminants is completed in-situ, no additional infrastructure is generally required to complete the remediation.

Drawbacks to the use of ISCO include the heat that is generated during the oxidative reaction and safety concerns for site personnel that may be exposed to strong oxidizing agents. Assessing the amount of oxidant that will be required (based on contaminant level and soil oxidant demand) and the best means of distributing the oxidant through the impacted zone can be complex. The oxidants are typically introduced into the ground during short-term events. The effectiveness of the treatment is generally not known for a period of weeks and months afterwards. If additional treatment is required, additional mobilization and injection events are required and additional costs are incurred.

Permanganate is not applicable due to its general inability to breakdown benzene within its window of activity in the subsurface. Ozone, persulfate, and hydrogen peroxide/fenton's reagent are potential oxidants, however care must be exercised to manage the potential corrosive impacts of these oxidants or their potential activation compounds at active facilities.

One additional drawback is that chemical oxidation does not address the unsaturated zone or smear zone. In some cases, soil blending (not applicable to this Site) or flooding of the smear zone can be employed to address unsaturated zone contamination. ISCO is typically used to rapidly reduce high concentrations of target compounds.

The Federal Remedial Technologies Screening Matrix rates ISCO as average (limited effectiveness demonstrated at pilot scale and full scale) for non-halogenated VOCs. As the bedrock and low permeability strata at the property may preclude efficient distribution of the oxidants, ISCO is not retained as a viable technology for this Site.

10.2.7 Carbon-Based Injection

Carbon-based injection is an in-situ treatment that involves the injection of powdered carbon within a liquid slurry to sequester and ultimately break down petroleum hydrocarbons. The powdered carbon initially sequesters the petroleum constituents in the same manner that it is used to treat aqueous phase dissolved constituents in an ex-situ treatment system. The surface area of the carbon also provides a substrate for the intrinsic bacteria to begin to break down the contaminant mass and provide additional sorption capacity as the contaminant mass is reduced. CBI has been used for about 10 years in numerous states to treat petroleum hydrocarbon plumes.

Like most injection technologies, the critical calculations are the volume of injectate that is required and the delivery method of injectate into the hydrocarbon plume. CBI is attractive because carbon is readily available and is not expensive compared to most injectates. Although it would not be capable of treating the entire plume, CBI is

retained as a viable remedial alternative for treatment of selected source areas within saturated soil or weathered bedrock, if identified.

10.2.8 Natural Attenuation

Natural attenuation refers to the natural reduction in contaminant concentration over time as the result of biodegradation, chemical reactions, dilution, volatilization, etc. Although natural attenuation does not involve active remediation, long term monitoring and analysis are generally required. Fate and transport modeling is used to estimate the time that the natural attenuation will require to meet the selected standard.

Given the stable plume and lack of active exposure pathways, natural attenuation is retained as a potential remedial action alternative.

11.0 REMEDIAL ACTION PLAN

11.1 GENERAL

Based on current knowledge of the site and experience at similar facilities, the following scope of work is proposed:

1. Four (4) additional groundwater sampling events at the Property. The sampling events would include water level measurements from available monitoring wells and sampling of monitoring wells MW-3, MW-6, MW-7, MW-8, MW-10, MW-10S, MW-12, MW-12S, MW-15S, MW-16, and MW-18S, MW-19S, MW-20S, and MW-22S through MW-27S.

Converse proposes four (4) additional quarterly groundwater sampling events to provide a statistically valid evaluation of contaminant trends.

Based on current information, additional measures that will be required to demonstrate attainment of the Statewide Health Site Specific Standard include:

1. LNAPL assessment and recovery for the area between the release and the Malago residence.
2. Updated soil vapor intrusion assessment in accordance with the 2017 guidance document.

Converse will update the site-specific Health & Safety Plan that complies with Occupational Safety and Health Administration (OSHA) 29 CFR Part 1910.120. Converse personnel will conduct all sample collection activities. All decontamination, sampling and other activities that are conducted by Converse personnel will be performed in strict accordance with accepted protocols.

11.2 PERMITS

To the best of our knowledge, no permits will be required for the proposed RAP.

11.3 REMEDIAL ACTION TASKS

11.3.1 Groundwater Sample Collection

Converse proposes to collect groundwater samples from monitoring wells MW-3, MW-6, MW-7, MW-8, MW-10, MW-10S, MW-12, MW-12S, MW-15S, MW-16, and MW-18S, MW-19S, MW-20S, and MW-22S through MW-27S. Water levels will be collected from all available monitoring wells. All groundwater samples will be analyzed for the 1998 UST Technical Document unleaded gasoline indicator compounds.

Prior to sample collection, groundwater levels will be measured at each of the monitoring wells and the saturated casing volumes will be calculated. The monitoring wells will be purged of approximately three (3) saturated casing volumes prior to sample collection using a dedicated whale pump or dedicated polyethylene bailer, as applicable. Groundwater samples will be collected directly into laboratory supplied glassware using a disposable bailer. Field parameters (pH, conductivity, etc) will be periodically measured and recorded during purge activities.

11.3.2 LNAPL Recovery

LNAPL recovery is being implemented as an interim remedial measure to periodically remove LNAPL from existing monitoring wells. Two (2) additional monitoring wells are planned to assess the extent of LNAPL in the shallow bedrock aquifer. Oil sorbent socks (New Pig 1.5” diameter or similar) will be used to recover LNAPL from MW-12S, and any other well with evidence of LNAPL. Sorbent socks will be changed out every 2 weeks. The spent socks will be stored in labelled drums that is located at the site. The drums will be dispositioned by EAP Industries of Atlasburg, Pennsylvania in accordance with applicable regulations.

11.3.3 Soil Vapor Intrusion Assessment

As LNAPL is located in close proximity to the residence, additional soil vapor samples will be collected to evaluate potential IAQ issues.

Sample Collection

Sample collection and evaluation will be completed in accordance with *Pennsylvania Land Recycling Program, Technical Guidance Manual,* (*253-0300*-101), *November 19, 2016, Land Recycling Program TGM for Vapor Intrusion Into Buildings from Groundwater and Soil under Act 2, effective* January 18, 2017 (*2017 Vapor Intrusion Guidance*). Two rounds of soil vapor samples will be completed from soil vapor points SV-4 through SV-6. Each round will include the soil vapor points plus a blind duplicate sample and an ambient air sample. Sample rounds will be separated by an interval of 4 to 5 weeks.

The length of all sample transfer lines will be kept as short as possible to minimize condensation of the extracted gas in the line. The air volume in the well and tubing will be calculated and will be purged of at least two (2) interior-diameter (ID) air volumes prior to sample collection using a peristaltic pump. Each sample location will be purged for an appropriate period of time at a flow rate of 0.3 liters per minute.

Soil gas samples will be collected using laboratory-supplied SUMMA Canisters (6 liter volume). Canister vacuum will be recorded at the beginning and upon completion of the sampling period.

Temperature is recorded at the beginning and end of the sampling period for indoor air quality (IAQ) samples. However, this is not feasible for soil gas samples. The sampling temperature will be assumed to be 11.1°C, the average soil temperature used by PADEP as an input parameter for the Johnson and Ettinger Model (*2004 Vapor Intrusion Guidance*: Table 8).

Soil gas samples will be collected using laboratory-supplied SUMMA Canisters (6 liter volume) at the following sampling rate and sample duration:
Sampling Rate: 50 ml per minute.
Sample Duration: 120 minutes.

Laboratory Analysis

The soil gas samples will be analyzed for the 1998 unleaded gasoline short list compounds by USEPA Method TO-15.

Quality Assurance/Quality Control

The SUMMA Canisters are purged, decontaminated, and sampled at the laboratory prior to shipment. One (1) ambient air sample will be submitted for laboratory analysis for each sampling event.

Each sample will be given a unique identification number that will be recorded on the field log, the Chain of Custody record, and the sample label. Chain of Custody documentation will be completed for and will accompany each sample set.

Single-use, factory decontaminated nylon tubing will be used to collect the samples. Decontamination of sample equipment will not be necessary.

The laboratory will provide data to estimate precision, accuracy, and bias. Results will be provided as parts per billion by volume (ppbv) and milligrams per cubic meter (mg/m3). The laboratory will be requested to use the average of the beginning and ending temperature readings for the IAQ samples and 11.1°C for the soil gas samples to calculate the appropriate temperature conversion factor (ATCF) for the conversion of ppbv to mg/m3. If the laboratory cannot modify their software and uses another temperature to calculate the ATCF, Converse will convert the analytical results from ppbv to mg/m3 using the correct ATCF.

Laboratory data will be sufficient to permit comparison to the applicable standards (100 times indoor air MSCs).

11.4 WASTE MANAGEMENT

Impacted purge water from the groundwater sampling activities will be containerized for off-property disposal. The drums of LNAPL and sorbent materials will be dispositioned by EAP Industries of Atlasburg, Pennsylvania in accordance with applicable regulations.

11.5 REMEDIAL ACTION COMPLETION REPORT

Unless the proposed tasks indicate the presence of a potential exposure pathway, a RACR will be prepared and submitted to PADEP in accordance with the requirements of the §245.313. If requested, a Draft copy of the RACR will be provided to the claimant and USTIF for review and approval prior to submission. The RACR will be sealed by a Pennsylvania Professional Geologist (PG). A Draft Environmental Covenant will be submitted when requested by PADEP.

11.6 SITE RESTORATION

Once final approval is received from PADEP for the Remedial Action Completion Report, Converse will restore the areas of the Site that were altered by the remediation and monitoring. The restoration includes abandonment of monitoring wells, removal of any treatment system components, and restoration of paved areas (patching) and grass areas that have been impacted by the remedial activities.

12.0 PLANNED ACTIVITIES

Converse will complete interim remedial measures to assess the extent of LNAPL on the downgradient property and initiate product recovery activities.

The third quarter 2017 groundwater sample collection event is scheduled for the end of September 2017. Converse has completed a second quarter 2017 groundwater sample collection event. The results are discussed in the 2Q 2017 RAPR. Converse will continue with quarterly sampling events for at least four (4) additional quarters.

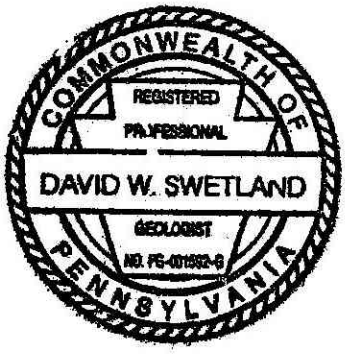
The soil vapor intrusion assessment will be updated to meet the requirements of the latest guidance document.

13.0 QUALIFICATIONS

Mr. David W. Swetland, P.G., Senior Geologist, was responsible for management of the project and technical oversight of the work completed by Converse. Mr. Swetland has twenty-eight (28) years of experience supervising site characterizations and providing environmental consulting services throughout the Northeast.

Mr. David W. Swetland, P.G.,
Senior Geologist

AFFIX
P.G. SEAL
HERE



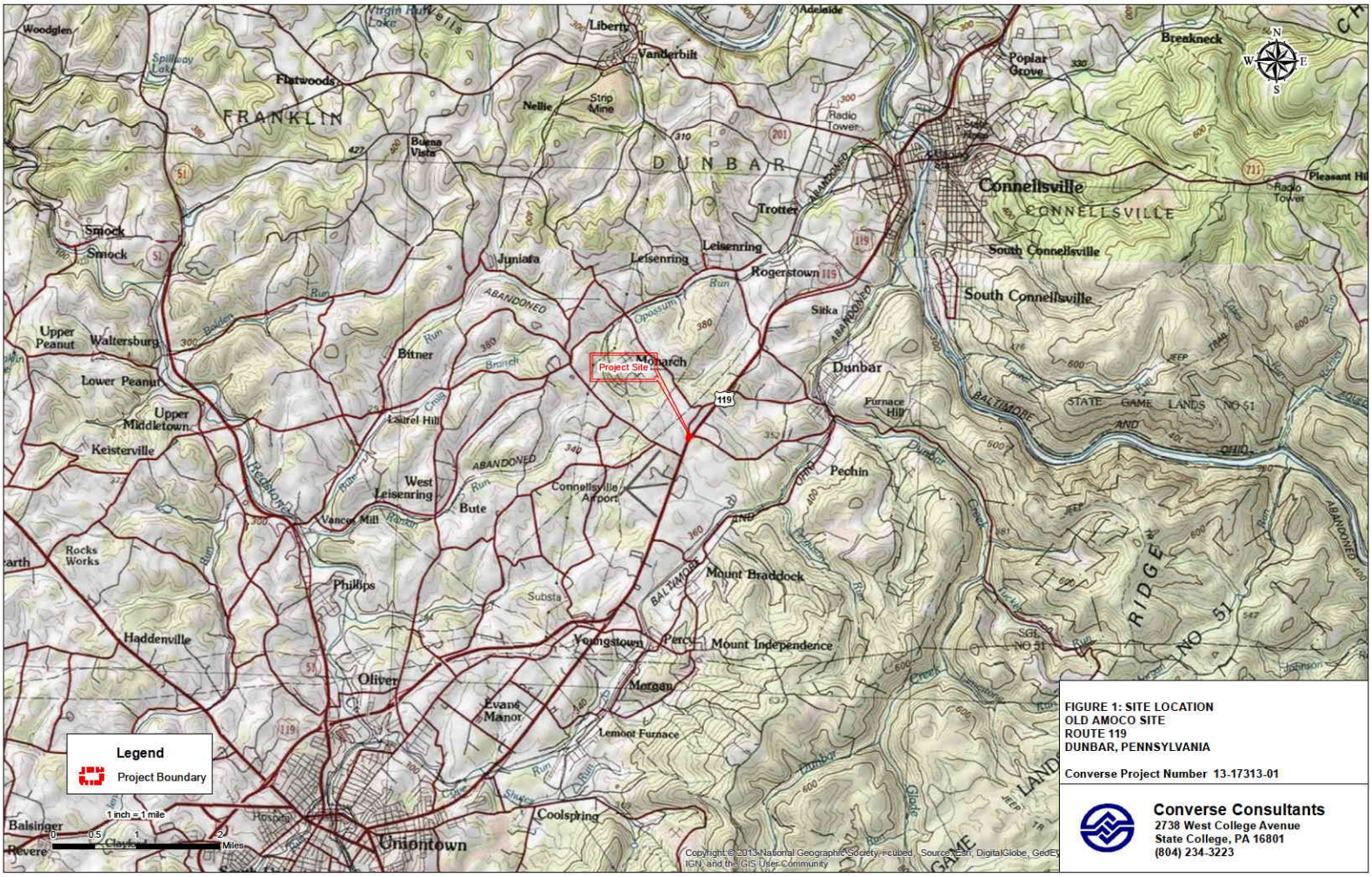


FIGURE 1: SITE LOCATION
OLD AMOCO SITE
ROUTE 119
DUNBAR, PENNSYLVANIA

Converse Project Number 13-17313-01

Converse Consultants
2738 West College Avenue
State College, PA 16801
(804) 234-3223

FIGURE 2: SITE PLAN

OLD AMOCO SITE
ROUTE 119
DUNBAR, PENNSYLVANIA

Converse Project Number 13-17313-01

Converse Consultants
2738 West College Avenue
State College, PA 16801
(804) 234-3223

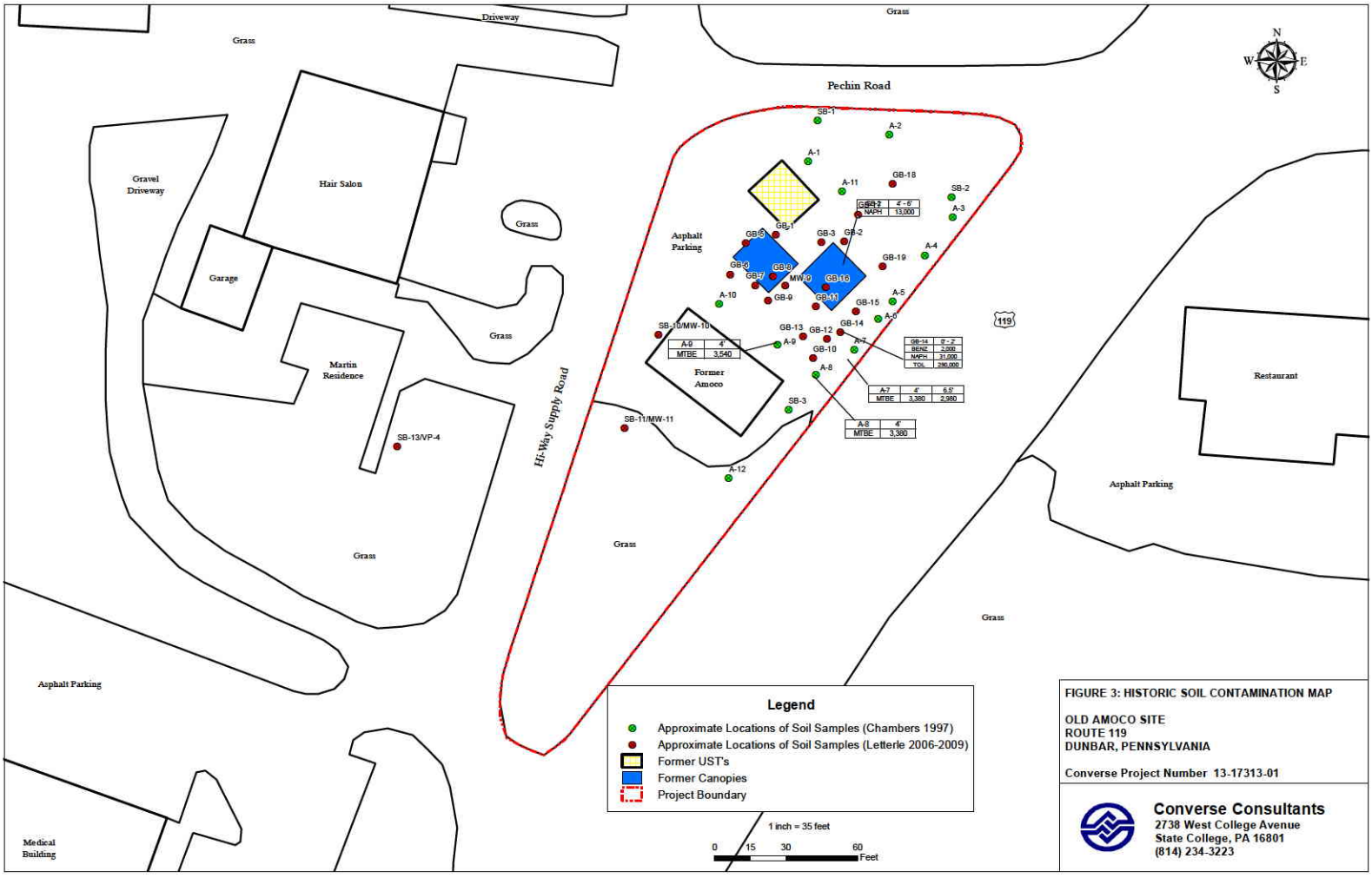


FIGURE 3: HISTORIC SOIL CONTAMINATION MAP

OLD AMOCO SITE
ROUTE 119
DUNBAR, PENNSYLVANIA

Converse Project Number 13-17313-01

Converse Consultants
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FIGURE 4A: SHALLOW BEDROCK GROUNDWATER CONTOUR - 06/24/14

OLD AMOCO SITE
ROUTE 119
DUNBAR, PENNSYLVANIA

Converse Project Number 13-17313-01

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2738 West College Avenue
State College, PA 16801
(814) 234-3223

FIGURE 4B: SHALLOW BEDROCK GROUNDWATER CONTOUR - 8/28/14

OLD AMOCO SITE
ROUTE 119
DUNBAR, PENNSYLVANIA

Converse Project Number 13-17313-01

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FIGURE 4C: SHALLOW BEDROCK GROUNDWATER CONTOUR - 06/30/16

OLD AMOCO SITE
ROUTE 119
DUNBAR, PENNSYLVANIA

Converse Project Number 13-17313-01

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FIGURE 4D: SHALLOW BEDROCK GROUNDWATER CONTOUR - 09/20/16

OLD AMOCO SITE
ROUTE 119
DUNBAR, PENNSYLVANIA

Converse Project Number 13-17313-01

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2738 West College Avenue
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FIGURE 5A: DEEP BEDROCK GROUNDWATER CONTOUR - 06/24/14

OLD AMOCO SITE
ROUTE 119
DUNBAR, PENNSYLVANIA

Converse Project Number 13-17313-01

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FIGURE 5B: DEEP BEDROCK GROUNDWATER CONTOUR - 06/30/16

OLD AMOCO SITE
ROUTE 119
DUNBAR, PENNSYLVANIA

Converse Project Number 13-17313-01

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FIGURE 6A:BENZENE ISOCONCENTRATION MAP IN SHALLOW BEDROCK - 06/24/14

OLD AMOCO SITE
ROUTE 119
DUNBAR, PENNSYLVANIA

Converse Project Number 13-17313-01

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FIGURE 6B: MTBE ISOCONCENTRATION MAP IN SHALLOW BEDROCK - 06/24/14

OLD AMOCO SITE
ROUTE 119
DUNBAR, PENNSYLVANIA

Converse Project Number 13-17313-01

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FIGURE 7A:BENZENE ISOCONCENTRATION MAP IN SHALLOW BEDROCK - 06/30/16

OLD AMOCO SITE
ROUTE 119
DUNBAR, PENNSYLVANIA

Converse Project Number 13-17313-01

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FIGURE 7B: MTBE ISOCONCENTRATION MAP IN SHALLOW BEDROCK - 06/30/16

OLD AMOCO SITE
ROUTE 119
DUNBAR, PENNSYLVANIA

Converse Project Number 13-17313-01

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FIGURE 8: EXTENDED SITE PLAN (with POND)

OLD AMOCO SITE
ROUTE 119
DUNBAR, PENNSYLVANIA

Converse Project Number 13-17313-01

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TABLE 1
GROUNDWATER ELEVATION DATA
FORMER DUNBAR AMOCO
13-17313-01

WELL	TWD	SI	TOC	DATE	DTW	GW ELEV
MW-3	36.00	16 to 36	1,237.88	6/24/14	12.48	1225.40
				8/28/14	NS	NS
				6/30/16	14.74	1223.14
				9/20/16	13.65	1224.23
				6/29/17	14.7	1223.18
MW-4	50.00	30 to 50	1,236.13	6/24/14	34.49	1201.64
				8/28/14	IA	IA
				6/30/16	IA	IA
				9/20/16	IA	IA
				6/29/17	IA	IA
MW-6	46.00	26 to 46	1,231.64	6/24/14	27.56	1204.08
				8/28/14	NS	NS
				6/30/16	28.12	1203.52
				9/20/16	NS	NS
				6/29/17	27.55	1204.09
MW-7	50.00	35 to 50	1,244.14	6/24/14	44.35	1199.79
				8/28/14	NS	NS
				6/30/16	44.22	1199.92
				9/20/16	NS	NS
				6/29/17	IA	IA
MW-8	51.00	36 to 51	1,239.09	6/24/14	36.91	1202.18
				8/28/14	NS	NS
				6/30/16	37.28	1201.81
				9/20/16	37.98	1201.11
				6/29/17	30.6	1208.49
MW-10	50.00	35 to 50	1,239.23	6/24/14	34.45	1204.78
				8/28/14	NS	NS
				6/30/16	33.97	1205.26
				9/20/16	39.87	1199.36
				6/29/17	41.3	1197.93

TABLE 1
GROUNDWATER ELEVATION DATA
FORMER DUNBAR AMOCO
13-17313-01

WELL	TWD	SI	TOC	DATE	DTW	GW ELEV
MW-10S	30.15	15 to 30	1,243.27	6/24/14	13.79	1229.48
				8/28/14	14.45	1228.82
				6/30/16	15.46	1227.81
				9/20/16	17.56	1225.71
				6/29/17	13.79	1229.48
MW-12	50.00	30 to 50	1,241.56	6/24/14	37.95	1203.61
				8/28/14	NS	NS
				6/30/16	36.65	1204.91
				9/20/16	37.28	1204.28
				6/29/17	30.41	1211.15
MW-12S	26.55	15 to 27	1,237.47	6/24/14	15.51	1221.96
				8/28/14	17.65	1219.82
				6/30/16	24.55	1212.92
				9/20/16	25.7	1211.77
				6/29/17	21.74	1215.73
MW-13	50.00	30 to 50	1,234.87	6/24/14	32.27	1202.60
				8/28/14	NS	NS
				6/30/16	WD	WD
MW-13S	26.70	15 to 27	1,230.77	6/24/14	13.90	1216.87
				8/28/14	22.34	1208.43
				6/30/16	WD	WD
MW-14S	30.00	15 to 30	1,231.26	6/24/14	13.15	1218.11
				8/28/14	NS	NS
				6/30/16	WD	WD

TABLE 1
GROUNDWATER ELEVATION DATA
FORMER DUNBAR AMOCO
13-17313-01

WELL	TWD	SI	TOC	DATE	DTW	GW ELEV
MW-15S	30.00	15 to 30	1,232.90	6/24/14	10.58	1222.32
				8/28/14	NS	NS
				6/30/16	13.55	1219.35
				9/20/16	14.62	1218.28
				6/29/17	13.43	1219.47
MW-16	60.00	45 to 60	1,233.64	6/24/14	33.58	1200.06
				8/28/14	NS	NS
				6/30/16	44.63	1189.01
				9/20/16	NS	NS
				6/29/17	44.15	1189.49
MW-17	55.00	40 to 55	1,231.48	6/24/14	38.95	1192.53
				8/28/14	NS	NS
				6/30/16	WD	WD
MW-18S	29.80	15 to 30	1,238.82	6/24/14	11.95	1226.87
				8/28/14	13.69	1225.13
				6/30/16	17.60	1221.22
				9/20/16	IA	IA
				6/29/17	14.12	1,224.70
MW-19S	29.72	15 to 30	1,236.17	6/24/14	12.20	1223.97
				8/28/14	12.47	1223.70
				6/30/16	11.65	1224.52
				9/20/16	NS	NS
				6/29/17	12.69	1,223.48
MW-20S	29.80	15 to 30	1,231.36	6/24/14	8.05	1223.31
				8/28/14	8.91	1218.63
				6/30/16	12.73	1218.63
				9/20/16	NS	NS
				6/29/17	12.1	1,219.26

TABLE 1
GROUNDWATER ELEVATION DATA
FORMER DUNBAR AMOCO
13-17313-01

WELL	TWD	SI	TOC	DATE	DTW	GW ELEV
MW-21S	30.00	15 to 30	1,226.37	6/24/14	4.65	1221.72
				8/28/14	4.83	1221.54
				6/30/16	NS	NS
				6/29/17	8.39	1217.98
MW-22S	29.10	15 to 29	1,240.51	6/24/14	13.05	1227.46
				8/28/14	14.48	1224.91
				6/30/16	15.60	1224.91
				9/20/16	NS	NS
				6/29/17	14.82	1,225.69
MW-23S	30.00	13 to 30	1,236.51	6/30/16	18.95	1217.56
				9/20/16	20.13	1216.38
				6/29/17	16.41	1220.10
MW-24S	25.50	15 to 25.5	1,224.25	6/30/16	13.00	1211.25
				9/20/16	14.91	1209.34
				6/29/17	12.21	1212.04
MW-25S	25.00	10 to 25	1,216.55	6/30/16	10.94	1205.61
				9/20/16	13.05	1203.50
				6/29/17	11.80	1204.75
MW-26S	32.00	17 to 32	1,230.69	6/30/16	13.86	1216.83
				9/20/16	15.64	1215.05
				6/29/17	12.89	1217.80
MW-27S	30.00	17 to 30	1,234.43	6/30/16	21.37	1213.06
				9/20/16	21.75	1212.68
				6/29/17	24.90	1209.53

(2) = Diameter of Well Casing in Inches.
TWD = Total Well Depth in feet below grade.
SI = Screened Interval in feet below ç DTW = Measured Depth to Groundwater from TOC.
TOCG = Top of Well Casing relative · GW ELEV = Calculated Groundwater Elevation.
+ = Approximate feet above ç NM = Well not measured.
- = Approximate feet below ç NA = Not Applicable.
TOC = Top of Well Casing. IA = Inaccessible.
WD = Well Destroyed NS = Not Sampled.
6/29/17- Shallow Monitoring well water levels were recorded 7/7/17

TABLE 2
Groundwater Analytical Summary Table
Former Dunbar Amoco
13-17313-01

Monitoring Well ID	Act 2 - Standards / Sample Date	Analytical Parameters						
		5	1,000	700	10,000	1,100	20	100
		Benzene	Toluene	Ethylbenzene	Total Xylenes	Isopropylbenzene*	MTBE	Naphthalene
MW-3	6/24/2014	**5.1**	1.1	8.0	16.3	1.8	6.0	1.1
	8/28/2014	NS	NS	NS	NS	NS	NS	NS
	6/30/2016	<1	<1	<1	<2	<1	12.4	<1
	9/20/2016	NS	NS	NS	NS	NS	NS	NS
	6/29/2017*	<1	<1	<1	<2	<1	<1	<1
MW-4	6/24/2014	<1	<1	<1	<2	<1	1.2	<1
	8/28/2014	NS	NS	NS	NS	NS	NS	NS
	6/30/2016	NS	NS	NS	NS	NS	NS	NS
	9/20/2016	NS	NS	NS	NS	NS	NS	NS
	6/29/2017*	NS	NS	NS	NS	NS	NS	NS
MW-6	6/24/2014	<1	<1	<1	<2	<1	<1	<1
	8/28/2014	NS	NS	NS	NS	NS	NS	NS
	6/30/2016	<1	<1	<1	<2	<1	<1	<1
	9/20/2016	NS	NS	NS	NS	NS	NS	NS
	6/29/2017*	<1	<1	<1	<2	<1	<1	<1
MW-7	6/24/2014	<1	<1	<1	<2	<1	1.5	<1
	8/28/2014	NS	NS	NS	NS	NS	NS	NS
	6/30/2016	<1	<1	<1	<2	<1	8.96	<1
	9/20/2016	NS	NS	NS	NS	NS	NS	NS
	6/29/2017*	NS	NS	NS	NS	NS	NS	NS
MW-8	6/24/2014	<1	<1	<1	<2	<1	<1	<1
	8/28/2014	NS	NS	NS	NS	NS	NS	NS
	6/30/2016	<1	<1	<1	<2	<1	<1	<1
	9/20/2016	NS	NS	NS	NS	NS	NS	NS
	6/29/2017*	<1	<1	<1	<2	<1	<1	<1
MW-10	6/24/2014	<1/<1	<1/<1	<1/<1	<2/<2	<1/<1	8.96/13	<1/<1
	8/28/2014	NS	NS	NS	NS	NS	NS	NS
	6/30/2016	1.0	1.6	<1	<2	<1	9.4	<1
	9/20/2016	NS	NS	NS	NS	NS	NS	NS
	6/29/2017*	<1	1.2	<1	<2	<1	6.6	<1
MW-10S	6/24/2014	**164**	88	476	1060	112	7	**196**
	8/28/2014	**658**	48	680	176	130	**55**	**256**
	6/30/2016	**142**	12	252	21	42	15	68
	9/20/2016	NS	NS	NS	NS	NS	NS	NS
	6/29/2017*	20	<5	36	<10	19	<5	9.9
MW-12	6/24/2014	**163.0**	6.1	39.6	22.6	13.8	**186.0**	12.4
	8/28/2014	NS	NS	NS	NS	NS	NS	NS
	6/30/2016	**137/127**	<25/<25	<25/<25	<50/<50	<25/<25	**159/154**	<25/<25
	9/20/2016	NS	NS	NS	NS	NS	NS	NS
	6/29/2017*	**119 / 120**	3.9 / 3.9	<1 / <1	4.6 / 4.5	12 / 11	**114 / 114**	7.6
MW-12S	6/24/2014	**751**	67	**938**	565	228	**91**	**558**
	8/28/2014	**2,050/852**	267/<100	**787/801**	888/440	132/154	**123/102**	**381/411**
	6/30/2016	**972**	48	346	80	69	**121**	<25
	9/20/2016	NS	NS	NS	NS	NS	NS	NS
	6/29/2017*	**619**	35	313	141	72	**132**	169
MW-13	6/24/2014	**39**	4.2	35	27	4.8	**35**	4.1
	8/28/2014	NS	NS	NS	NS	NS	NS	NS
	6/30/2016	WD	WD	WD	WD	WD	WD	WD
MW-13S	6/24/2014	**188**	47	564	237	70	**41**	**172**
	8/28/2014	**599**	69	**740**	418	111	**74**	206
	6/30/2016	WD	WD	WD	WD	WD	WD	WD
MW-14	6/24/2014	**150.0**	7.6	52	15	13	**30**	12
	8/28/2014	NS	NS	NS	NS	NS	NS	NS
	6/30/2016	WD	WD	WD	WD	WD	WD	WD

TABLE 2
Groundwater Analytical Summary Table
Former Dunbar Amoco
13-17313-01

Monitoring Well ID	Act 2 - Standards / Sample Date	Analytical Parameters						
		5	1,000	700	10,000	1,100	20	100
		Benzene	Toluene	Ethylbenzene	Total Xylenes	Isopropylbenzene*	MTBE	Naphthalene
MW-15S	6/24/2014	**27**	1.9	4.2	5.5	<1	13	1.3
	8/28/2014	NS	NS	NS	NS	NS	NS	NS
	6/30/2016	**236**	40	95	232	22	**113**	67
	9/20/2016	NS	NS	NS	NS	NS	NS	NS
	6/29/2017*	**20**	<1	<1	2.7	<1	6.5	1.2
MW-16	6/24/2014	<1	<1	<1	<2	<1	<1	<1
	8/28/2014	NS	NS	NS	NS	NS	NS	NS
	6/30/2016	<1	<1	<1	<2	<1	<1	<1
	9/20/2016	NS	NS	NS	NS	NS	NS	NS
	6/29/2017*	<1	<1	<1	<2	<1	<1	<1
MW-17	6/24/2014	<1	<1	<1	<2	<1	<1	<1
	8/28/2014	NS	NS	NS	NS	NS	NS	NS
	6/30/2016	WD	WD	WD	WD	WD	WD	WD
MW-18S	6/24/2014	**984**	213	**878**	1120	182	**310**	**365**
	8/28/2014	**554**	149	**884**	2600	120	**134**	**206**
	6/30/2016	**231**	42	547	650	81	**60**	**177**
	9/20/2016	NS	NS	NS	NS	NS	NS	NS
	6/29/2017*	**160**	26	449	310	77	**35**	84
MW-19S	6/24/2014	**24**	<1	<1	<2	<1	**167**	<1
	8/28/2014	**10**	<2	<2	<4	<2	16	<2
	6/30/2016	**39**	<1	<1	<2	<1	**64**	<1
	9/20/2016	NS	NS	NS	NS	NS	NS	NS
	6/29/2017*	2.9	<1	<1	<2	<1	**146**	<1
MW-20S	6/24/2014	**29**	<1	<1	<2	<1	**114**	<1
	8/28/2014	**15**	<2	<2	<4	<2	**75**	<2
	6/30/2016	**65**	<1	<1	<2	1.4	**119**	<1
	9/20/2016	NS	NS	NS	NS	NS	NS	NS
	6/29/2017*	**49**	<1	<1	2.4	<1	**94**	<1
MW-21S	6/24/2014	**9.4**	<1	<1	<2	<1	19	<1
	8/28/2014	<1	<1	<1	<2	<1	<1	<1
	6/30/2016	NS	NS	NS	NS	NS	NS	NS
	6/29/2017*	4.7	<1	<1	<2	2.3	19	<1
MW-22S	6/24/2014	**1280**	63	234	373	71	**154**	**163**
	8/28/2014	**585**	48	332	420	61	**163**	**147**
	6/30/2016	**110**	15	118	117	38	**31**	47
	9/20/2016	NS	NS	NS	NS	NS	NS	NS
	6/29/2017*	**95**	13	150	70	44	**24**	30
MW-23S	6/30/2016	<1	<1	<1	<2	<1	<1	<1
	9/20/2016	<1/<1	<1/<1	<1/<1	<2/<2	<1/<1	2.0/1.9	<1/<1
	6/29/2017*	<1	<1	<1	<2	<1	<1	<1
MW-24S	6/30/2016	<1	<1	<1	<2	<1	**26**	<1
	9/20/2016	<1	<1	<1	<2	<1	**20**	<1
	6/29/2017*	<1	<1	<1	<2	<1	13	<1
MW-25S	6/30/2016	<1	<1	<1	<2	<1	18	<1
	9/20/2016	<1	<1	<1	<2	<1	16	<1
	6/29/2017*	<1	<1	<1	<2	<1	17	<1
MW-26S	6/30/2016	**6.0**	<5	<5	<10	<5	7.3	<5
	9/20/2016	2.6	<1	<1	<2	2.7	8.9	<1
	6/29/2017*	<1	<1	<1	<2	1.3	4.4	<1
MW-27S*	6/30/2016	<1	<1	<1	<2	<1	**28**	<1
	9/20/2016	<1	<1	<1	<2	<1	11	<1
	6/29/2017*	<1	<1	<1	<2	<1	**26**	<1
POND	6/30/2016	<1	<1	<1	<2	<1	<1	<1
	9/20/2016	<1	<1	<1	<2	<1	<1	<1
Trip Blank	6/24/2014	<1	<1	<1	<2	<1	<1	<1
	8/28/2014	<1	<1	<1	<2	<1	<1	<1
	6/30/2016	<1	<1	<1	<2	<1	<1	<1
	9/20/2016	<1	<1	<1	<2	<1	<1	<1
	6/29/2017*	<1	<1	<1	<2	<1	<1	<1

Notes: Concentrations measured in micrograms per liter (ug/L)
NS - Not sampled
WD - Well destroyed
MTBE - Methyl-Tert Butyl Ether
* Isopropylbenzene is also known as cumene
1.3/1.7 represents a duplicate sample taken
6/29/2017*- Samples MW-23S through MW-26S collected on 7/7/17
MW-27S* - This well was labeled as MW-4 for sampling date 6/29/2017 on the Fairway Laboratory Data Report

WELL LOG

BORING NO.: MW-10S

PROJECT: DUNBAR AMOCO — LOCATION: Dunbar, PA — SHEET 1 OF 1

CLIENT: Tim and Michelle Shell — PROJ. NO.: 13-17313-01

BORING CONTRACTOR: Eichelberger's — Drilling Rig: Geoprobe 7822DT — ELEVATION: NM

DATUM: NM

DATE START: 5/16/14

DATE FINISH: 5/16/14

DRILLER: Chris

CONVERSE REP.: Orion Cook

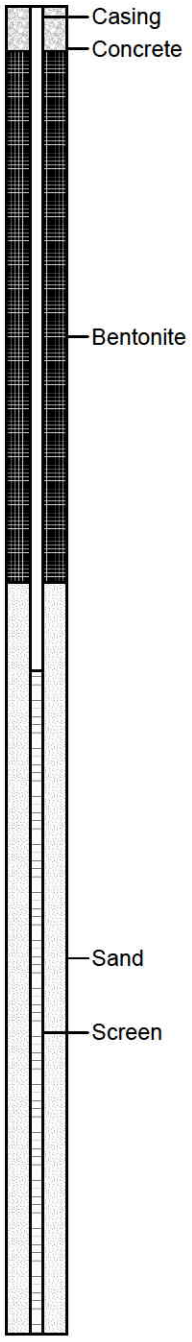
GROUNDWATER DATA

DATE	TIME	DEPTH	CASING
5/16/14	2:00pm	12.77'	30.15'

	Boring	Sampler	Casing	Screen	Core	
Type	HSA					
Dia.	4"	2"	2"	2"		
Length	30'		15'	15'		
Fall						

Depth in Feet	Sample No.	Blow Counts	Recovery In Feet	PID Readings	USCS	DESCRIPTION
0					Asphalt	Asphalt
1	1				GP	GRAVEL FILL
2				0		CLAY with silt, light brown, damp
3	2					
4				0		
5	3				CL	---gray to brown color
6				0		
7	4					
8				0		---some gravel
9	5				GP	GRAVEL with sand, some silt and clay. Damp, light brown. Water from ten to twelve feet
10						Bedrock
11						
12						
13						
14						
15						
16						
17						
18						
19						
20					BR	
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

MW-10S



WELL LOG

BORING NO.: MW-12S

PROJECT: DUNBAR AMOCO | LOCATION: Dunbar, PA | SHEET 1 OF 1

CLIENT: Tim and Michelle Shell | PROJ. NO.: 13-17313-01

BORING CONTRACTOR: Eichelberger's | Drilling Rig: Geoprobe 7822DT | ELEVATION: NM

DATUM: NM

DATE START: 5/15/14

DATE FINISH: 5/15/14

DRILLER: Chris

CONVERSE REP.: Orion Cook

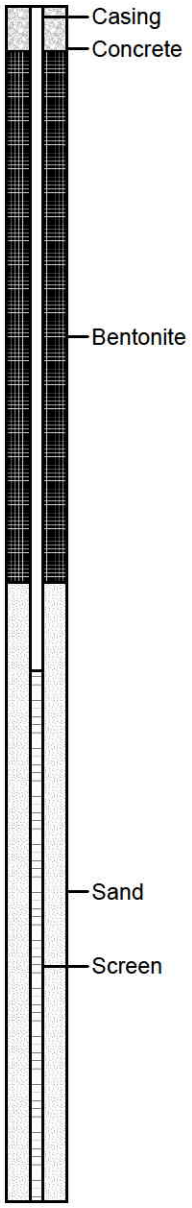
GROUNDWATER DATA

DATE	TIME	DEPTH	CASING
5/15/14	9:40am	14.75'	26.55'
5/16/14	12:10pm	13.66'	

	Boring	Sampler	Casing	Screen	Core	
Type	HSA					
Dia.	4"	2"	2"	2"		
Length	27"		15'	12'		
Fall						

Depth in Feet	Sample No.	Blow Counts	Recovery In Feet	PID Readings	USCS	DESCRIPTION
0					OL	TOPSOIL, organics
1						CLAY with some silt, brown, damp
2	1					
3						
4						
5				0	CL	---some gravel, gray
6						
7	2					
8						---light brown color
9						
10						BEDROCK
11						
12						
13						
14						
15						
16						
17						
18					Bedrock	---gas odor
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

MW-12S



WELL LOG

BORING NO.: MW-13S

PROJECT: DUNBAR AMOCO	LOCATION: Dunbar, PA
CLIENT: Tim and Michelle Shell	
BORING CONTRACTOR: Eichelberger's	Drilling Rig: Geoprobe 7822DT

SHEET 1 OF 1
PROJ. NO.: 13-17313-01
ELEVATION: 1,231 ft
DATUM: FTAMSL
DATE START: 5/13/14
DATE FINISH: 5/13/14
DRILLER: Chris
CONVERSE REP.: Toby Tucker

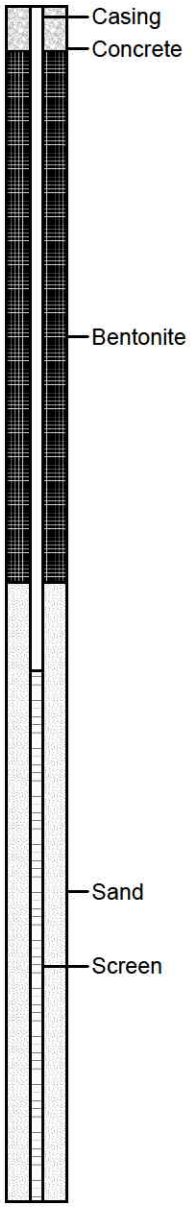
GROUNDWATER DATA

DATE	TIME	DEPTH	CASING
5/13/14	3:00pm	17.48'	26.7'
5/14/14	11:51am	24.19'	
5/16/14	8:40am	18.24'	

	Boring	Sampler	Casing	Screen	Core	
Type	HSA/AR					
Dia.	4"/8"	2"	2"	2"		
Length	27"		15'	12'		
Fall						

Depth in Feet	Sample No.	Blow Counts	Recovery In Feet	PID Readings	USCS	DESCRIPTION
0–1					FL	TOPSOIL, grass ---6" gravel fill, gray, dry ---6" silty clay, brown, slightly moist
1–5	1		4.0/5.0	0	CL	Silty CLAY with some sand, brown, slightly moist ---gravel ---dry
5–10	2		5.0/5.0	0		---orange color ---black, dry Refusal at nine feet
10–27					BR	BEDROCK

MW-13S



WELL LOG

BORING NO.: MW-18S

PROJECT: DUNBAR AMOCO | LOCATION: Dunbar, PA | SHEET 1 OF 1

CLIENT: Tim and Michelle Shell | PROJ. NO.: 13-17313-01

BORING CONTRACTOR: Eichelberger's | Drilling Rig: Geoprobe 7822DT | ELEVATION: NM

DATUM: NM

DATE START: 5/16/14

DATE FINISH: 5/16/14

DRILLER: Chris

CONVERSE REP.: Toby/Rick

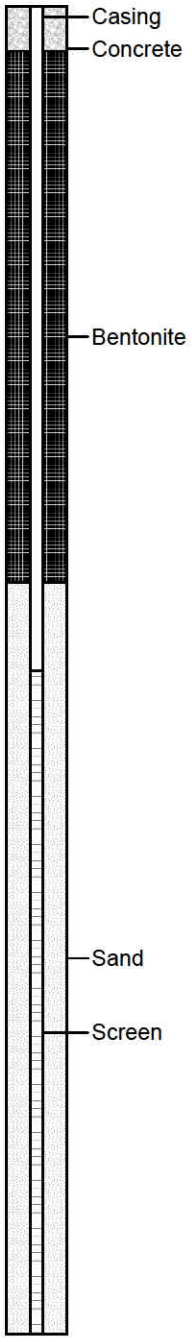
GROUNDWATER DATA

DATE	TIME	DEPTH	CASING
5/16/14	11:55am	9.43'	29.8'
5/16/14	1:11pm	10.08'	

	Boring	Sampler	Casing	Screen	Core	
Type						
Dia.	4"	2"	2"	2"		
Length	30'		15'	12'		
Fall						

Depth in Feet	Sample No.	Blow Counts	Recovery In Feet	PID Readings	USCS	DESCRIPTION
0					GP	GRAVEL FILL
1	1					CLAY with some silt, brown, damp
2				0	CL	
3	2					
4				0		
5	3				GP	GRAVEL (fill) ---some sand and silty clay, damp
6				0		
7	4					CLAY with silt, light brown to gray, damp
8				8.5	CL	
9	5					---some gravel
10				14		Weathered BEDROCK
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

MW-12S



WELL LOG

BORING NO.: MW-19S

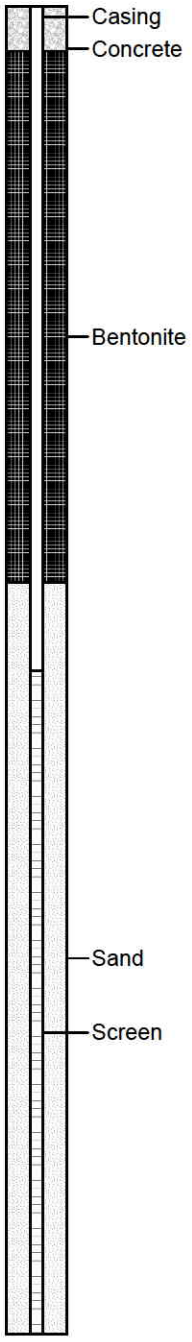
PROJECT: DUNBAR AMOCO
LOCATION: Dunbar, PA
CLIENT: Tim and Michelle Shell
BORING CONTRACTOR: Eichelberger's
Drilling Rig: Geoprobe 7822DT

SHEET 1 OF 1
PROJ. NO.: 13-17313-01
ELEVATION: NM
DATUM: NM
DATE START: 5/14/14
DATE FINISH: 5/15/14
DRILLER: Chris
CONVERSE REP.: Orion Cook

GROUNDWATER DATA					Boring	Sampler	Casing	Screen	Core	
DATE	TIME	DEPTH	CASING	Type	HSA					
5/14/14	5:15pm	11.49'	29.72"	Dia.	4"	2"	2"	2"		
5/15/14	3:54pm	11.55'		Length	15'		15'			
				Fall						

Depth in Feet	Sample No.	Blow Counts	Recovery In Feet	PID Readings	USCS	DESCRIPTION
0					OL	TOPSOIL, organics
1						CLAY with some silt, damp, hard, orange-brown color
2	1		4.5/5.0			
3						
4						---sandstone cobble
5				0	CL	---dark brown
6						
7	2					
8						
9						
10						Bedrock
11						
12						
13						
14						
15						
16						
17						
18						
19						
20					BR	
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

MW-19S



WELL LOG

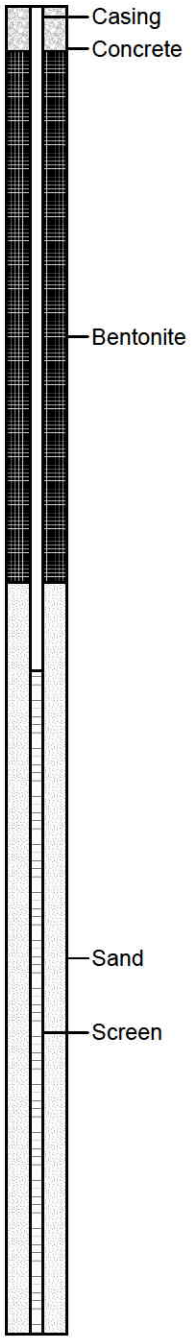
BORING NO.: MW-20S

PROJECT: DUNBAR AMOCO	LOCATION: Dunbar, PA	SHEET 1 OF 1
CLIENT: Tim and Michelle Shell		PROJ. NO.: 13-17313-01
BORING CONTRACTOR: Eichelberger's	Drilling Rig: Geoprobe 7822DT	ELEVATION:

GROUNDWATER DATA					Boring	Sampler	Casing	Screen	Core		DATUM:
DATE	TIME	DEPTH	CASING	Type							DATE START: 5/14/14
5/14/14	9:50am	9.47'	29.8'	Dia.	4"	2"	2"	2"			DATE FINISH: 5/14/14
5/14/14	11:48am	9.34'		Length	27"		15'	15'			DRILLER: Chris
				Fall							CONVERSE REP.: Orion Cook

Depth in Feet	Sample No.	Blow Counts	Recovery In Feet	PID Readings	USCS	DESCRIPTION
0					OL	TOPSOIL, organics
1						---orange
2	1		5.0/5.0			CLAY with some silt, damp, hard
3						---light brown to tan
4						
5				0	CL	
6						---more sand
7	2		5.0/5.0			
8						---gray
9						---refusal at ten feet
10				0		BEDROCK
11						
12						
13						
14						
15						
16						
17						
18						
19						
20					BR	
21						
22						---black rock (coal)
23						
24						
25						
26						
27						---black rock
28						
29						
30						

MW-20S



WELL LOG

BORING NO.: MW-21S

PROJECT: DUNBAR AMOCO | LOCATION: Dunbar, PA | SHEET 1 OF 1

CLIENT: Tim and Michelle Shell | PROJ. NO.: 13-17313-01

BORING CONTRACTOR: Eichelberger's | Drilling Rig: Geoprobe 7822DT | ELEVATION:

DATUM:

DATE START: 5/13/14

DATE FINISH: 5/14/14

DRILLER: Chris

CONVERSE REP.: Orion Cook

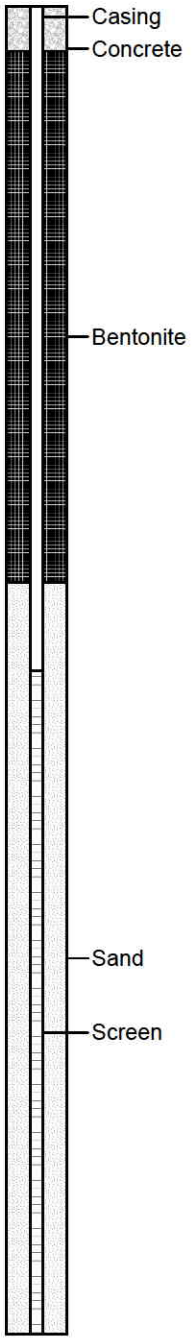
GROUNDWATER DATA

DATE	TIME	DEPTH	CASING
5/14/14	10:40am	5.26'	30'
5/15/14	8:06am	6.32'	

	Boring	Sampler	Casing	Screen	Core
Type	Geoprobe				
Dia.	4"	2"	2"	2"	
Length	30'		15'	15'	
Fall					

Depth in Feet	Sample No.	Blow Counts	Recovery In Feet	PID Readings	USCS	DESCRIPTION
0					OR	TOPSOIL
1					CL	Light brown, damp CLAY with silt
2	1		4.8/5.0			---sand
3						---more gray, slightly moist
4						
5				0		---dark brown, more silt
6					GP	Saturated GRAVEL, black
7					SP	SIlty SAND with gravel, brown, damp
8	2		5.0/5.0		CL	Light brown CLAY with silt, damp, brown
9						
10				0		Weathered BEDROCK, refusal at ten feet
11						
12						
13						
14						
15						
16						
17						
18						
19					BR	
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

MW-21S



WELL LOG

BORING NO.: MW-22S

PROJECT: DUNBAR AMOCO | LOCATION: Dunbar, PA | SHEET 1 OF 1

CLIENT: Tim and Michelle Shell | PROJ. NO.: 13-17313-01

BORING CONTRACTOR: Eichelberger's | Drilling Rig: Geoprobe 7822DT | ELEVATION:

DATUM:

DATE START: 5/15/14

DATE FINISH: 5/16/14

DRILLER: Chris

CONVERSE REP.: Orion Cook

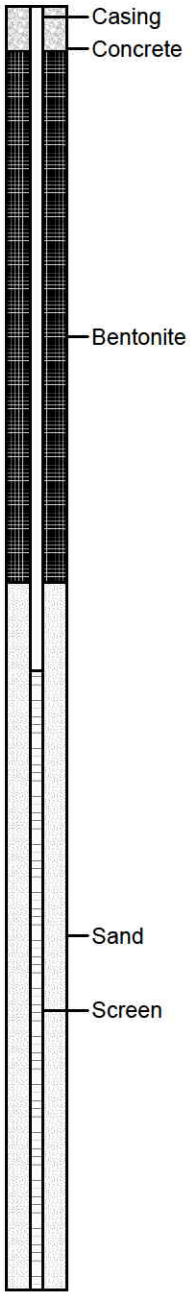
GROUNDWATER DATA

DATE	TIME	DEPTH	CASING
5/15/14	9:17am	11.20'	29.10'
5/16/14	11:58am	9.58'	

	Boring	Sampler	Casing	Screen	Core	
Type	HSA					
Dia.	4"	2"	2"	2"		
Length	29'		15'	14'		
Fall						

Depth in Feet	Sample No.	Blow Counts	Recovery In Feet	PID Readings	USCS	DESCRIPTION
0					GP	GRAVEL FILL
1	1					CLAY with some silt, damp, orange-brown
2				0	CL	
3	2					---more silt and sand
4				0		
5	3					SAND with some silt and gravel, dark brown, damp
6				0	SP	
7	4					CLAY with silt and some sand, brown-gray, damp
8				5	CL	
9	5				GP	GRAVEL, fractured bedrock
10				200		BEDROCK
11						
12						
13						
14						
15						
16						
17						
18						
19						
20					BR	
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

MW-22S



Converse Consultants
2738 West College Avenue
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BORING NUMBER MW-23S

CLIENT ICF International
PROJECT NAME Dunbar Amoco
PROJECT NUMBER 13-17313-00
PROJECT LOCATION 1809 University Drive, Connellsville, PA 15431
DATE STARTED 6/16/16 **COMPLETED** 6/16/16
GROUND ELEVATION 1236.51 ft **HOLE SIZE** inches
DRILLING CONTRACTOR Eichelbergers
GROUND WATER LEVELS:
DRILLING METHOD Direct Push
AT TIME OF DRILLING ---
LOGGED BY MK **CHECKED BY** DWS
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	ENVIRONMENTAL DATA	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
0.0						Casing Top Elev: 1 (ft)
					(ML) **CLAYEY SILT** brown, no odor	
0.5					1236.0	
					TOPSOIL dark brown	
2.5						
5.0					1231.5	
					(ML) **CLAYEY SILT** with Weathered Rock, wet at bottom, tan and gray	
7.5						
9.8					1226.7	
10.0					**BEDROCK**	
12.5						
15.0						

(Continued Next Page)

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BORING NUMBER MW-23S

CLIENT ICF International **PROJECT NAME** Dunbar Amoco

PROJECT NUMBER 13-17313-00 **PROJECT LOCATION** 1809 University Drive, Connellsville, PA 15431

DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	ENVIRONMENTAL DATA	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
15.0					**BEDROCK** *(continued)*	
17.5						
20.0						
22.5						
25.0						
27.5						
30.0					30.0 1206.5	

Bottom of borehole at 30.0 feet.

Converse Consultants
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BORING NUMBER MW-24S

CLIENT ICF International
PROJECT NAME Dunbar Amoco
PROJECT NUMBER 13-17313-00
PROJECT LOCATION 1809 University Drive, Connellsville, PA 15431
DATE STARTED 6/17/16 **COMPLETED** 6/17/16
GROUND ELEVATION 1224.25 ft **HOLE SIZE** inches
DRILLING CONTRACTOR Eichelbergers
GROUND WATER LEVELS:
DRILLING METHOD Direct Push
AT TIME OF DRILLING ---
LOGGED BY MK **CHECKED BY** DWS
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	ENVIRONMENTAL DATA	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
0.0						Casing Top Elev: 1 (ft)
					(CL-ML) **SILTY CLAY** tan/grey	
					1.4 — 1222.9	
					(ML) **SILTY SAND** w/clay	
2.5						
5.0					5.0 — 1219.3	
					SILTY CLAYlight brown	
7.5						
					...light grey	
10.0					10.0 — 1214.3	
					SHALE	
12.5						
15.0						

(Continued Next Page)

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BORING NUMBER MW-24S

CLIENT ICF International **PROJECT NAME** Dunbar Amoco

PROJECT NUMBER 13-17313-00 **PROJECT LOCATION** 1809 University Drive, Connellsville, PA 15431

DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	ENVIRONMENTAL DATA	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
15.0					**SHALE** *(continued)*	
17.5						
					18.0 1206.3	
					... w/coal, light grey to black	
20.0						
22.5						
25.0						

Bottom of borehole at 25.5 feet.

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BORING NUMBER MW-25S

CLIENT ICF International
PROJECT NAME Dunbar Amoco
PROJECT NUMBER 13-17313-00
PROJECT LOCATION 1809 University Drive, Connellsville, PA 15431
DATE STARTED 6/20/16 **COMPLETED** 6/20/16
GROUND ELEVATION 1216.55 ft **HOLE SIZE** inches
DRILLING CONTRACTOR Eichelbergers
GROUND WATER LEVELS:
DRILLING METHOD Direct Push
AT TIME OF DRILLING ---
LOGGED BY MK **CHECKED BY** DWS
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	ENVIRONMENTAL DATA	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
0.0						Casing Top Elev: 1 (ft)
					(ML) **ORGANIC SANDY SILT** W/Clay	
					1.0 — 1215.6	
					(CL-ML) **SILTY CLAY**light brown	
2.5					**SILTY CLAY** light brown w/Gravel	
5.0					5.0 — 1211.6	
					(ML) **SILT** brown w/shale layers	
					6.5 — 1210.1	
7.5					**SHALE** weathered	
10.0					10.0 — 1206.6	
					BEDROCK light grey weathered shale	
					...dark grey weathered shale	
12.5					...solid dark grey shale	
15.0						

ENVIRONMENTAL BH - GINT STD US LAB.GDT - 7/14/17 13:41 - C:\USERS\PUBLIC\DOCUMENTS\BENTLEY\GINT\PROJECTS\DUNBAR GEOTECH.GPJ

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BORING NUMBER MW-25S

CLIENT ICF International **PROJECT NAME** Dunbar Amoco

PROJECT NUMBER 13-17313-00 **PROJECT LOCATION** 1809 University Drive, Connellsville, PA 15431

DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	ENVIRONMENTAL DATA	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
15.0					...solid dark grey shale *(continued)*	
17.5						
20.0						
22.5						
25.0					25.0 1191.6	

Bottom of borehole at 25.0 feet.

Converse Consultants
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BORING NUMBER MW-26S

CLIENT ICF International
PROJECT NAME Dunbar Amoco
PROJECT NUMBER 13-17313-00
PROJECT LOCATION 1809 University Drive, Connellsville, PA 15431
DATE STARTED 6/30/16 **COMPLETED** 6/30/16
GROUND ELEVATION 1230.69 ft **HOLE SIZE** inches
DRILLING CONTRACTOR Eichelbergers
GROUND WATER LEVELS:
DRILLING METHOD Direct Push
AT TIME OF DRILLING ---
LOGGED BY JPF **CHECKED BY** DWS
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	ENVIRONMENTAL DATA	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
0.0					**ASPHALT**	Casing Top Elev: 1 (ft) Casing Type: Bentonite
					2.0 1228.7	
2.5					(CL-ML) **SILTY CLAY** with Gravel, dark brown	
5.0					...gray streaks	
					7.0 1223.7	
7.5					**SILTSTONE** weathered	
10.0					Refusal @ '12	
					12.0 1218.7	
12.5					**BEDROCK** >	
15.0						

ENVIRONMENTAL BH - GINT STD US LAB.GDT - 7/14/17 13:41 - C:\USERS\PUBLIC\DOCUMENTS\BENTLEY\GINT\PROJECTS\DUNBAR GEOTECH.GPJ

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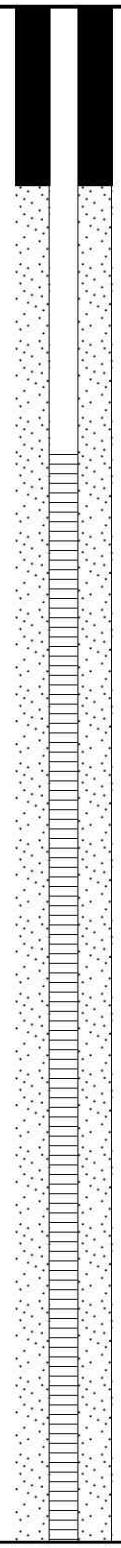
BORING NUMBER MW-26S

CLIENT ICF International **PROJECT NAME** Dunbar Amoco

PROJECT NUMBER 13-17313-00 **PROJECT LOCATION** 1809 University Drive, Connellsville, PA 15431

DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	ENVIRONMENTAL DATA	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
					BEDROCK > *(continued)*	



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2738 West College Avenue
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BORING NUMBER MW-26S

CLIENT ICF International **PROJECT NAME** Dunbar Amoco

PROJECT NUMBER 13-17313-00 **PROJECT LOCATION** 1809 University Drive, Connellsville, PA 15431

DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	ENVIRONMENTAL DATA	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
					BEDROCK > *(continued)*	
33.0					1197.7	

Bottom of borehole at 15.0 feet.

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2738 West College Avenue
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BORING NUMBER MW-27S

CLIENT ICF International
PROJECT NAME Dunbar Amoco
PROJECT NUMBER 13-17313-00
PROJECT LOCATION 1809 University Drive, Connellsville, PA 15431
DATE STARTED 6/16/16 **COMPLETED** 6/16/16
GROUND ELEVATION 1234.43 ft **HOLE SIZE** inches
DRILLING CONTRACTOR Eichelbergers
GROUND WATER LEVELS:
DRILLING METHOD Direct Push
AT TIME OF DRILLING ---
LOGGED BY MK **CHECKED BY** DWS
AT END OF DRILLING 13.00 ft / Elev 1221.43 ft
NOTES
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	ENVIRONMENTAL DATA	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
0.0						Casing Top Elev: 1 (ft) Casing Type: Bentonite
					FILL Gravel	
1.0						1233.4
					(ML) **SILT** with weathered Gray Shale, brown	
2.5						
5.0						1229.4
					COAL with weathered Gray Shale, Refusal at 9.7'	
7.5						
9.7						1224.7
10.0					**BEDROCK** Gray Shale	
12.5						
13.0 ▼						1221.4
					COAL	
15.0						1219.4

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2738 West College Avenue
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BORING NUMBER MW-27S

CLIENT ICF International **PROJECT NAME** Dunbar Amoco

PROJECT NUMBER 13-17313-00 **PROJECT LOCATION** 1809 University Drive, Connellsville, PA 15431

DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	ENVIRONMENTAL DATA	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
15.0					**SANDSTONE** gray, no odors	
17.5						
20.0						
22.5						
25.0						
27.5						
30.0					30.0 1204.4	

Bottom of borehole at 32.0 feet.

2019 Ninth Avenue
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Altoona, PA 16603
(814) 946-4306
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89 Kristi Road
Pennsdale, PA 17756
(570) 494-6380
PaDEP: PA 41-04684

State Certifications: MD 275, WV 364

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Converse		Project:	DUNBAR AMOCO	
2738 West College Avenue		Project Number:	13-17313-01	**Reported:**
State College PA, 16801		Collector:	CLIENT	08/26/14 15:31
Project Manager:	Orion Cook	Number of Containers:	43	

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Sample Type	Date Sampled	Date Received
MW-3	4F25127-01	Water	Grab	06/24/14 14:55	06/25/14 15:45
MW-4	4F25127-02	Water	Grab	06/24/14 13:25	06/25/14 15:45
MW-6	4F25127-03	Water	Grab	06/24/14 15:20	06/25/14 15:45
MW-7	4F25127-04	Water	Grab	06/24/14 12:45	06/25/14 15:45
MW-8	4F25127-05	Water	Grab	06/24/14 14:30	06/25/14 15:45
MW-10	4F25127-06	Water	Grab	06/24/14 14:00	06/25/14 15:45
MW-10S	4F25127-07	Water	Grab	06/24/14 14:15	06/25/14 15:45
MW-12	4F25127-08	Water	Grab	06/24/14 11:40	06/25/14 15:45
MW-12S	4F25127-09	Water	Grab	06/24/14 11:30	06/25/14 15:45
MW-13	4F25127-10	Water	Grab	06/24/14 10:55	06/25/14 15:45
MW-13S	4F25127-11	Water	Grab	06/24/14 11:00	06/25/14 15:45
MW-14	4F25127-12	Water	Grab	06/24/14 10:20	06/25/14 15:45
MW-15S	4F25127-13	Water	Grab	06/24/14 10:30	06/25/14 15:45
MW-16	4F25127-14	Water	Grab	06/24/14 10:35	06/25/14 15:45
MW-17	4F25127-15	Water	Grab	06/24/14 10:12	06/25/14 15:45
MW-18S	4F25127-16	Water	Grab	06/24/14 12:20	06/25/14 15:45
MW-19S	4F25127-17	Water	Grab	06/24/14 09:18	06/25/14 15:45
MW-20S	4F25127-18	Water	Grab	06/24/14 09:36	06/25/14 15:45

Fairway Laboratories, Inc.

Reviewed and Submitted by:

Michael P. Tyler
Laboratory Director

Fairway Labs in Altoona, PA is a NELAP (National Environmental Laboratory Accreditation Program) accredited lab, and as such, certifies that all applicable test results meet the requirements of NELAP, unless otherwise stated on the analytical report.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

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PaDEP: PA 41-04684

State Certifications: MD 275, WV 364

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Converse		Project:	DUNBAR AMOCO	
2738 West College Avenue		Project Number:	13-17313-01	**Reported:**
State College PA, 16801		Collector:	CLIENT	08/26/14 15:31
Project Manager:	Orion Cook	Number of Containers:	43	

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Sample Type	Date Sampled	Date Received
MW-21S	4F25127-19	Water	Grab	06/24/14 09:56	06/25/14 15:45
MW-22S	4F25127-20	Water	Grab	06/24/14 13:15	06/25/14 15:45
MW-10M	4F25127-21	Water	Grab	06/24/14 14:00	06/25/14 15:45
T.B.	4F25127-22	Water	Trip Blank	06/24/14 00:00	06/25/14 15:45

Per client, the labels/data is switched on the following:
4F25127-08 (MW12) and 4F25127-09 (MW12S)
4F25127-10 (MW13) and 4F25127-11 (MW13S)

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State Certifications: MD 275, WV 364

FAIRWAY LABORATORIES
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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	13-17313-01	**Reported:**
State College PA, 16801	Collector:	CLIENT	08/26/14 15:31
Project Manager: Orion Cook	Number of Containers:	43	

Client Sample ID: MW-3 **Date/Time Sampled:** 06/24/14 14:55

Laboratory Sample ID: 4F25127-01 (Water/Grab)

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	* Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
Benzene	5.13		1.00	ug/l	07/01/14 06:13	EPA 8260B	wlm	
Toluene	1.07		1.00	ug/l	07/01/14 06:13	EPA 8260B	wlm	
Ethylbenzene	7.97		1.00	ug/l	07/01/14 06:13	EPA 8260B	wlm	
Xylenes (total)	16.3		2.00	ug/l	07/01/14 06:13	EPA 8260B	wlm	
Isopropylbenzene	1.79		1.00	ug/l	07/01/14 06:13	EPA 8260B	wlm	
Methyl tert-butyl ether	5.98		1.00	ug/l	07/01/14 06:13	EPA 8260B	wlm	
Naphthalene	1.10		1.00	ug/l	07/01/14 06:13	EPA 8260B	wlm	
Surrogate: 4-Bromofluorobenzene		*103 %*	*70-130*		*07/01/14 06:13*	*EPA 8260B*	wlm	
Surrogate: 1,2-Dichloroethane-d4		*106 %*	*70-130*		*07/01/14 06:13*	*EPA 8260B*	wlm	
Surrogate: Fluorobenzene		*100 %*	*70-130*		*07/01/14 06:13*	*EPA 8260B*	wlm	

Fairway Labs in Altoona, PA is a NELAP (National Environmental Laboratory Accreditation Program) accredited lab, and as such, certifies that all applicable test results meet the requirements of NELAP, unless otherwise stated on the analytical report.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	13-17313-01	**Reported:**
State College PA, 16801	Collector:	CLIENT	08/26/14 15:31
Project Manager: Orion Cook	Number of Containers:	43	

Client Sample ID: MW-4 **Date/Time Sampled:** 06/24/14 13:25

Laboratory Sample ID: 4F25127-02 (Water/Grab)

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	* Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
Benzene	<1.00		1.00	ug/l	07/01/14 06:41	EPA 8260B	wlm	
Toluene	<1.00		1.00	ug/l	07/01/14 06:41	EPA 8260B	wlm	
Ethylbenzene	<1.00		1.00	ug/l	07/01/14 06:41	EPA 8260B	wlm	
Xylenes (total)	<2.00		2.00	ug/l	07/01/14 06:41	EPA 8260B	wlm	
Isopropylbenzene	<1.00		1.00	ug/l	07/01/14 06:41	EPA 8260B	wlm	
Methyl tert-butyl ether	1.23		1.00	ug/l	07/01/14 06:41	EPA 8260B	wlm	
Naphthalene	<1.00		1.00	ug/l	07/01/14 06:41	EPA 8260B	wlm	
Surrogate: 4-Bromofluorobenzene		*101 %*	*70-130*		*07/01/14 06:41*	*EPA 8260B*	wlm	
Surrogate: 1,2-Dichloroethane-d4		*106 %*	*70-130*		*07/01/14 06:41*	*EPA 8260B*	wlm	
Surrogate: Fluorobenzene		*99.5 %*	*70-130*		*07/01/14 06:41*	*EPA 8260B*	wlm	

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	13-17313-01	**Reported:**
State College PA, 16801	Collector:	CLIENT	08/26/14 15:31
Project Manager: Orion Cook	Number of Containers:	43	

Client Sample ID: MW-6 **Date/Time Sampled:** 06/24/14 15:20

Laboratory Sample ID: 4F25127-03 (Water/Grab)

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	* Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
Benzene	<1.00		1.00	ug/l	07/01/14 07:09	EPA 8260B	wlm	
Toluene	<1.00		1.00	ug/l	07/01/14 07:09	EPA 8260B	wlm	
Ethylbenzene	<1.00		1.00	ug/l	07/01/14 07:09	EPA 8260B	wlm	
Xylenes (total)	<2.00		2.00	ug/l	07/01/14 07:09	EPA 8260B	wlm	
Isopropylbenzene	<1.00		1.00	ug/l	07/01/14 07:09	EPA 8260B	wlm	
Methyl tert-butyl ether	<1.00		1.00	ug/l	07/01/14 07:09	EPA 8260B	wlm	
Naphthalene	<1.00		1.00	ug/l	07/01/14 07:09	EPA 8260B	wlm	
Surrogate: 4-Bromofluorobenzene		*100 %*	*70-130*		*07/01/14 07:09*	*EPA 8260B*	wlm	
Surrogate: 1,2-Dichloroethane-d4		*107 %*	*70-130*		*07/01/14 07:09*	*EPA 8260B*	wlm	
Surrogate: Fluorobenzene		*100 %*	*70-130*		*07/01/14 07:09*	*EPA 8260B*	wlm	

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	13-17313-01	**Reported:**
State College PA, 16801	Collector:	CLIENT	08/26/14 15:31
Project Manager: Orion Cook	Number of Containers:	43	

Client Sample ID: MW-7 **Date/Time Sampled:** 06/24/14 12:45

Laboratory Sample ID: 4F25127-04 (Water/Grab)

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	* Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
Benzene	<1.00		1.00	ug/l	07/01/14 08:32	EPA 8260B	wlm	
Toluene	<1.00		1.00	ug/l	07/01/14 08:32	EPA 8260B	wlm	
Ethylbenzene	<1.00		1.00	ug/l	07/01/14 08:32	EPA 8260B	wlm	
Xylenes (total)	<2.00		2.00	ug/l	07/01/14 08:32	EPA 8260B	wlm	
Isopropylbenzene	<1.00		1.00	ug/l	07/01/14 08:32	EPA 8260B	wlm	
Methyl tert-butyl ether	1.53		1.00	ug/l	07/01/14 08:32	EPA 8260B	wlm	
Naphthalene	<1.00		1.00	ug/l	07/01/14 08:32	EPA 8260B	wlm	
Surrogate: 4-Bromofluorobenzene		*102 %*	*70-130*		*07/01/14 08:32*	*EPA 8260B*	wlm	
Surrogate: 1,2-Dichloroethane-d4		*106 %*	*70-130*		*07/01/14 08:32*	*EPA 8260B*	wlm	
Surrogate: Fluorobenzene		*99.8 %*	*70-130*		*07/01/14 08:32*	*EPA 8260B*	wlm	

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	13-17313-01	**Reported:**
State College PA, 16801	Collector:	CLIENT	08/26/14 15:31
Project Manager: Orion Cook	Number of Containers:	43	

Client Sample ID: MW-8 **Date/Time Sampled:** 06/24/14 14:30

Laboratory Sample ID: 4F25127-05 (Water/Grab)

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	* Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
Benzene	<1.00		1.00	ug/l	06/30/14 18:12	EPA 8260B	wlm	
Toluene	<1.00		1.00	ug/l	06/30/14 18:12	EPA 8260B	wlm	
Ethylbenzene	<1.00		1.00	ug/l	06/30/14 18:12	EPA 8260B	wlm	
Xylenes (total)	<2.00		2.00	ug/l	06/30/14 18:12	EPA 8260B	wlm	
Isopropylbenzene	<1.00		1.00	ug/l	06/30/14 18:12	EPA 8260B	wlm	
Methyl tert-butyl ether	<1.00		1.00	ug/l	06/30/14 18:12	EPA 8260B	wlm	
Naphthalene	<1.00		1.00	ug/l	06/30/14 18:12	EPA 8260B	wlm	
Surrogate: 4-Bromofluorobenzene		*94.7 %*	*70-130*		*06/30/14 18:12*	*EPA 8260B*	wlm	
Surrogate: 1,2-Dichloroethane-d4		*96.0 %*	*70-130*		*06/30/14 18:12*	*EPA 8260B*	wlm	
Surrogate: Fluorobenzene		*101 %*	*70-130*		*06/30/14 18:12*	*EPA 8260B*	wlm	

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	13-17313-01	**Reported:**
State College PA, 16801	Collector:	CLIENT	08/26/14 15:31
Project Manager: Orion Cook	Number of Containers:	43	

Client Sample ID: **MW-10** **Date/Time Sampled:** 06/24/14 14:00

Laboratory Sample ID: **4F25127-06 (Water/Grab)**

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	* Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
Benzene	<1.00		1.00	ug/l	06/30/14 18:42	EPA 8260B	wlm	
Toluene	<1.00		1.00	ug/l	06/30/14 18:42	EPA 8260B	wlm	
Ethylbenzene	<1.00		1.00	ug/l	06/30/14 18:42	EPA 8260B	wlm	
Xylenes (total)	<2.00		2.00	ug/l	06/30/14 18:42	EPA 8260B	wlm	
Isopropylbenzene	<1.00		1.00	ug/l	06/30/14 18:42	EPA 8260B	wlm	
Methyl tert-butyl ether	8.96		1.00	ug/l	06/30/14 18:42	EPA 8260B	wlm	
Naphthalene	<1.00		1.00	ug/l	06/30/14 18:42	EPA 8260B	wlm	
Surrogate: 4-Bromofluorobenzene		*94.5 %*	*70-130*		*06/30/14 18:42*	*EPA 8260B*	wlm	
Surrogate: 1,2-Dichloroethane-d4		*94.7 %*	*70-130*		*06/30/14 18:42*	*EPA 8260B*	wlm	
Surrogate: Fluorobenzene		*99.8 %*	*70-130*		*06/30/14 18:42*	*EPA 8260B*	wlm	

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	13-17313-01	**Reported:**
State College PA, 16801	Collector:	CLIENT	08/26/14 15:31
Project Manager: Orion Cook	Number of Containers:	43	

Client Sample ID: **MW-10S** **Date/Time Sampled:** 06/24/14 14:15

Laboratory Sample ID: **4F25127-07 (Water/Grab)**

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	* Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
Benzene	164		5.00	ug/l	06/28/14 12:30	EPA 8260B	mtc	
Toluene	88.1		5.00	ug/l	06/28/14 12:30	EPA 8260B	mtc	
Ethylbenzene	476		5.00	ug/l	06/28/14 12:30	EPA 8260B	mtc	
Xylenes (total)	1060		10.0	ug/l	06/28/14 12:30	EPA 8260B	mtc	
Isopropylbenzene	112		5.00	ug/l	06/28/14 12:30	EPA 8260B	mtc	
Methyl tert-butyl ether	7.00		5.00	ug/l	06/28/14 12:30	EPA 8260B	mtc	
Naphthalene	196		5.00	ug/l	06/28/14 12:30	EPA 8260B	mtc	
Surrogate: 4-Bromofluorobenzene		*99.4 %*	*70-130*		*06/28/14 12:30*	*EPA 8260B*	mtc	
Surrogate: 1,2-Dichloroethane-d4		*96.9 %*	*70-130*		*06/28/14 12:30*	*EPA 8260B*	mtc	
Surrogate: Fluorobenzene		*98.8 %*	*70-130*		*06/28/14 12:30*	*EPA 8260B*	mtc	

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	13-17313-01	**Reported:**
State College PA, 16801	Collector:	CLIENT	08/26/14 15:31
Project Manager: Orion Cook	Number of Containers:	43	

Client Sample ID: **MW-12** **Date/Time Sampled:** 06/24/14 11:40

Laboratory Sample ID: **4F25127-08 (Water/Grab)**

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	* Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
Benzene	751		50.0	ug/l	07/03/14 00:33	EPA 8260B	mtc	
Toluene	67.0		50.0	ug/l	07/03/14 00:33	EPA 8260B	mtc	
Ethylbenzene	938		50.0	ug/l	07/03/14 00:33	EPA 8260B	mtc	
Xylenes (total)	565		100	ug/l	07/03/14 00:33	EPA 8260B	mtc	
Isopropylbenzene	228		50.0	ug/l	07/03/14 00:33	EPA 8260B	mtc	
Methyl tert-butyl ether	90.5		50.0	ug/l	07/03/14 00:33	EPA 8260B	mtc	
Naphthalene	558		50.0	ug/l	07/03/14 00:33	EPA 8260B	mtc	
Surrogate: 4-Bromofluorobenzene		*96.3 %*	*70-130*		*07/03/14 00:33*	*EPA 8260B*	mtc	
Surrogate: 1,2-Dichloroethane-d4		*89.8 %*	*70-130*		*07/03/14 00:33*	*EPA 8260B*	mtc	
Surrogate: Fluorobenzene		*101 %*	*70-130*		*07/03/14 00:33*	*EPA 8260B*	mtc	

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	13-17313-01	**Reported:**
State College PA, 16801	Collector:	CLIENT	08/26/14 15:31
Project Manager: Orion Cook	Number of Containers:	43	

Client Sample ID: **MW-12S** **Date/Time Sampled:** 06/24/14 11:30

Laboratory Sample ID: **4F25127-09 (Water/Grab)**

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	* Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
Benzene	163		5.00	ug/l	06/28/14 13:03	EPA 8260B	mtc	
Toluene	6.10		5.00	ug/l	06/28/14 13:03	EPA 8260B	mtc	
Ethylbenzene	39.6		5.00	ug/l	06/28/14 13:03	EPA 8260B	mtc	
Xylenes (total)	22.6		10.0	ug/l	06/28/14 13:03	EPA 8260B	mtc	
Isopropylbenzene	13.8		5.00	ug/l	06/28/14 13:03	EPA 8260B	mtc	
Methyl tert-butyl ether	186		5.00	ug/l	06/28/14 13:03	EPA 8260B	mtc	
Naphthalene	12.4		5.00	ug/l	06/28/14 13:03	EPA 8260B	mtc	
Surrogate: 4-Bromofluorobenzene		*99.0 %*	*70-130*		*06/28/14 13:03*	*EPA 8260B*	mtc	
Surrogate: 1,2-Dichloroethane-d4		*96.8 %*	*70-130*		*06/28/14 13:03*	*EPA 8260B*	mtc	
Surrogate: Fluorobenzene		*99.8 %*	*70-130*		*06/28/14 13:03*	*EPA 8260B*	mtc	

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	13-17313-01	**Reported:**
State College PA, 16801	Collector:	CLIENT	08/26/14 15:31
Project Manager: Orion Cook	Number of Containers:	43	

Client Sample ID: **MW-13** **Date/Time Sampled:** 06/24/14 10:55

Laboratory Sample ID: **4F25127-10 (Water/Grab)**

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	* Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
Benzene	188		10.0	ug/l	07/02/14 01:50	EPA 8260B	wlm	
Toluene	47.2		1.00	ug/l	06/30/14 19:12	EPA 8260B	wlm	
Ethylbenzene	564		10.0	ug/l	07/02/14 01:50	EPA 8260B	wlm	
Xylenes (total)	237		2.00	ug/l	06/30/14 19:12	EPA 8260B	wlm	
Isopropylbenzene	69.5		1.00	ug/l	06/30/14 19:12	EPA 8260B	wlm	
Methyl tert-butyl ether	40.7		1.00	ug/l	06/30/14 19:12	EPA 8260B	wlm	
Naphthalene	172		10.0	ug/l	07/02/14 01:50	EPA 8260B	wlm	
Surrogate: 4-Bromofluorobenzene		*99.1 %*	*70-130*		*06/30/14 19:12*	*EPA 8260B*	wlm	
Surrogate: 1,2-Dichloroethane-d4		*94.4 %*	*70-130*		*06/30/14 19:12*	*EPA 8260B*	wlm	
Surrogate: Fluorobenzene		*98.1 %*	*70-130*		*06/30/14 19:12*	*EPA 8260B*	wlm	

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	13-17313-01	**Reported:**
State College PA, 16801	Collector:	CLIENT	08/26/14 15:31
Project Manager: Orion Cook	Number of Containers:	43	

Client Sample ID: **MW-13S** **Date/Time Sampled:** 06/24/14 11:00

Laboratory Sample ID: **4F25127-11 (Water/Grab)**

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	* Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
Benzene	38.8		2.00	ug/l	07/02/14 11:59	EPA 8260B	mtc	
Toluene	4.16		2.00	ug/l	07/02/14 11:59	EPA 8260B	mtc	
Ethylbenzene	34.8		2.00	ug/l	07/02/14 11:59	EPA 8260B	mtc	
Xylenes (total)	26.5		4.00	ug/l	07/02/14 11:59	EPA 8260B	mtc	
Isopropylbenzene	4.84		2.00	ug/l	07/02/14 11:59	EPA 8260B	mtc	
Methyl tert-butyl ether	34.6		2.00	ug/l	07/02/14 11:59	EPA 8260B	mtc	
Naphthalene	4.06		2.00	ug/l	07/02/14 11:59	EPA 8260B	mtc	
Surrogate: 4-Bromofluorobenzene		*96.2 %*	*70-130*		*07/02/14 11:59*	*EPA 8260B*	mtc	
Surrogate: 1,2-Dichloroethane-d4		*91.5 %*	*70-130*		*07/02/14 11:59*	*EPA 8260B*	mtc	
Surrogate: Fluorobenzene		*100 %*	*70-130*		*07/02/14 11:59*	*EPA 8260B*	mtc	

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	13-17313-01	**Reported:**
State College PA, 16801	Collector:	CLIENT	08/26/14 15:31
Project Manager: Orion Cook	Number of Containers:	43	

Client Sample ID: **MW-14** **Date/Time Sampled:** 06/24/14 10:20

Laboratory Sample ID: **4F25127-12 (Water/Grab)**

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	* Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
Benzene	150		2.00	ug/l	07/02/14 12:37	EPA 8260B	mtc	
Toluene	7.60		2.00	ug/l	07/02/14 12:37	EPA 8260B	mtc	
Ethylbenzene	52.2		2.00	ug/l	07/02/14 12:37	EPA 8260B	mtc	
Xylenes (total)	15.2		4.00	ug/l	07/02/14 12:37	EPA 8260B	mtc	
Isopropylbenzene	13.0		2.00	ug/l	07/02/14 12:37	EPA 8260B	mtc	
Methyl tert-butyl ether	29.7		2.00	ug/l	07/02/14 12:37	EPA 8260B	mtc	
Naphthalene	11.7		2.00	ug/l	07/02/14 12:37	EPA 8260B	mtc	
Surrogate: 4-Bromofluorobenzene		*95.3 %*	*70-130*		*07/02/14 12:37*	*EPA 8260B*	mtc	
Surrogate: 1,2-Dichloroethane-d4		*92.1 %*	*70-130*		*07/02/14 12:37*	*EPA 8260B*	mtc	
Surrogate: Fluorobenzene		*101 %*	*70-130*		*07/02/14 12:37*	*EPA 8260B*	mtc	

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	13-17313-01	**Reported:**
State College PA, 16801	Collector:	CLIENT	08/26/14 15:31
Project Manager: Orion Cook	Number of Containers:	43	

Client Sample ID: **MW-15S** **Date/Time Sampled:** 06/24/14 10:30

Laboratory Sample ID: **4F25127-13 (Water/Grab)**

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	* Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
Benzene	26.9		1.00	ug/l	07/02/14 03:44	EPA 8260B	mtc	
Toluene	1.85		1.00	ug/l	07/02/14 03:44	EPA 8260B	mtc	
Ethylbenzene	4.15		1.00	ug/l	07/02/14 03:44	EPA 8260B	mtc	
Xylenes (total)	5.52		2.00	ug/l	07/02/14 03:44	EPA 8260B	mtc	
Isopropylbenzene	<1.00		1.00	ug/l	07/02/14 03:44	EPA 8260B	mtc	
Methyl tert-butyl ether	13.3		1.00	ug/l	07/02/14 03:44	EPA 8260B	mtc	
Naphthalene	1.30		1.00	ug/l	07/02/14 03:44	EPA 8260B	mtc	
Surrogate: 4-Bromofluorobenzene		*95.3 %*	*70-130*		*07/02/14 03:44*	*EPA 8260B*	mtc	
Surrogate: 1,2-Dichloroethane-d4		*97.1 %*	*70-130*		*07/02/14 03:44*	*EPA 8260B*	mtc	
Surrogate: Fluorobenzene		*101 %*	*70-130*		*07/02/14 03:44*	*EPA 8260B*	mtc	

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PaDEP: PA 41-04684

State Certifications: MD 275, WV 364

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	13-17313-01	**Reported:**
State College PA, 16801	Collector:	CLIENT	08/26/14 15:31
Project Manager: Orion Cook	Number of Containers:	43	

Client Sample ID: **MW-16** **Date/Time Sampled:** 06/24/14 10:35

Laboratory Sample ID: **4F25127-14 (Water/Grab)**

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	* Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
Benzene	<1.00		1.00	ug/l	06/30/14 20:12	EPA 8260B	wlm	
Toluene	<1.00		1.00	ug/l	06/30/14 20:12	EPA 8260B	wlm	
Ethylbenzene	<1.00		1.00	ug/l	06/30/14 20:12	EPA 8260B	wlm	
Xylenes (total)	<2.00		2.00	ug/l	06/30/14 20:12	EPA 8260B	wlm	
Isopropylbenzene	<1.00		1.00	ug/l	06/30/14 20:12	EPA 8260B	wlm	
Methyl tert-butyl ether	<1.00		1.00	ug/l	06/30/14 20:12	EPA 8260B	wlm	
Naphthalene	<1.00		1.00	ug/l	06/30/14 20:12	EPA 8260B	wlm	
Surrogate: 4-Bromofluorobenzene		*95.0 %*	*70-130*		*06/30/14 20:12*	*EPA 8260B*	wlm	
Surrogate: 1,2-Dichloroethane-d4		*93.1 %*	*70-130*		*06/30/14 20:12*	*EPA 8260B*	wlm	
Surrogate: Fluorobenzene		*100 %*	*70-130*		*06/30/14 20:12*	*EPA 8260B*	wlm	

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	13-17313-01	**Reported:**
State College PA, 16801	Collector:	CLIENT	08/26/14 15:31
Project Manager: Orion Cook	Number of Containers:	43	

Client Sample ID: MW-17 **Date/Time Sampled:** 06/24/14 10:12

Laboratory Sample ID: 4F25127-15 (Water/Grab)

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	* Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
Benzene	<1.00		1.00	ug/l	06/30/14 20:43	EPA 8260B	wlm	
Toluene	<1.00		1.00	ug/l	06/30/14 20:43	EPA 8260B	wlm	
Ethylbenzene	<1.00		1.00	ug/l	06/30/14 20:43	EPA 8260B	wlm	
Xylenes (total)	<2.00		2.00	ug/l	06/30/14 20:43	EPA 8260B	wlm	
Isopropylbenzene	<1.00		1.00	ug/l	06/30/14 20:43	EPA 8260B	wlm	
Methyl tert-butyl ether	<1.00		1.00	ug/l	06/30/14 20:43	EPA 8260B	wlm	
Naphthalene	<1.00		1.00	ug/l	06/30/14 20:43	EPA 8260B	wlm	
Surrogate: 4-Bromofluorobenzene		*94.6 %*	*70-130*		*06/30/14 20:43*	*EPA 8260B*	wlm	
Surrogate: 1,2-Dichloroethane-d4		*95.5 %*	*70-130*		*06/30/14 20:43*	*EPA 8260B*	wlm	
Surrogate: Fluorobenzene		*102 %*	*70-130*		*06/30/14 20:43*	*EPA 8260B*	wlm	

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	13-17313-01	**Reported:**
State College PA, 16801	Collector:	CLIENT	08/26/14 15:31
Project Manager: Orion Cook	Number of Containers:	43	

Client Sample ID: **MW-18S** **Date/Time Sampled:** 06/24/14 12:20

Laboratory Sample ID: **4F25127-16 (Water/Grab)**

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	* Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
Benzene	984		50.0	ug/l	07/01/14 22:04	EPA 8260B	mtc	
Toluene	213		5.00	ug/l	06/28/14 13:36	EPA 8260B	mtc	
Ethylbenzene	878		50.0	ug/l	07/01/14 22:04	EPA 8260B	mtc	
Xylenes (total)	1120		10.0	ug/l	06/28/14 13:36	EPA 8260B	mtc	
Isopropylbenzene	182		5.00	ug/l	06/28/14 13:36	EPA 8260B	mtc	
Methyl tert-butyl ether	310		5.00	ug/l	06/28/14 13:36	EPA 8260B	mtc	
Naphthalene	365		5.00	ug/l	06/28/14 13:36	EPA 8260B	mtc	
Surrogate: 4-Bromofluorobenzene		*101 %*	*70-130*		*06/28/14 13:36*	*EPA 8260B*	mtc	
Surrogate: 1,2-Dichloroethane-d4		*95.7 %*	*70-130*		*06/28/14 13:36*	*EPA 8260B*	mtc	
Surrogate: Fluorobenzene		*98.2 %*	*70-130*		*06/28/14 13:36*	*EPA 8260B*	mtc	

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	13-17313-01	**Reported:**
State College PA, 16801	Collector:	CLIENT	08/26/14 15:31
Project Manager: Orion Cook	Number of Containers:	43	

Client Sample ID: **MW-19S** **Date/Time Sampled:** 06/24/14 09:18

Laboratory Sample ID: **4F25127-17 (Water/Grab)**

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	* Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
Benzene	23.5		1.00	ug/l	06/30/14 21:12	EPA 8260B	wlm	
Toluene	<1.00		1.00	ug/l	06/30/14 21:12	EPA 8260B	wlm	
Ethylbenzene	<1.00		1.00	ug/l	06/30/14 21:12	EPA 8260B	wlm	
Xylenes (total)	<2.00		2.00	ug/l	06/30/14 21:12	EPA 8260B	wlm	
Isopropylbenzene	<1.00		1.00	ug/l	06/30/14 21:12	EPA 8260B	wlm	
Methyl tert-butyl ether	167		5.00	ug/l	07/02/14 03:06	EPA 8260B	wlm	
Naphthalene	<1.00		1.00	ug/l	06/30/14 21:12	EPA 8260B	wlm	
Surrogate: 4-Bromofluorobenzene		*95.1 %*	*70-130*		*06/30/14 21:12*	*EPA 8260B*	wlm	
Surrogate: 1,2-Dichloroethane-d4		*93.9 %*	*70-130*		*06/30/14 21:12*	*EPA 8260B*	wlm	
Surrogate: Fluorobenzene		*100 %*	*70-130*		*06/30/14 21:12*	*EPA 8260B*	wlm	

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	13-17313-01	**Reported:**
State College PA, 16801	Collector:	CLIENT	08/26/14 15:31
Project Manager: Orion Cook	Number of Containers:	43	

Client Sample ID: **MW-20S** **Date/Time Sampled:** 06/24/14 09:36

Laboratory Sample ID: **4F25127-18 (Water/Grab)**

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	* Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
Benzene	29.0		1.00	ug/l	07/01/14 09:46	EPA 8260B	wlm	
Toluene	<1.00		1.00	ug/l	07/01/14 09:46	EPA 8260B	wlm	
Ethylbenzene	<1.00		1.00	ug/l	07/01/14 09:46	EPA 8260B	wlm	
Xylenes (total)	<2.00		2.00	ug/l	07/01/14 09:46	EPA 8260B	wlm	
Isopropylbenzene	<1.00		1.00	ug/l	07/01/14 09:46	EPA 8260B	wlm	
Methyl tert-butyl ether	114		5.00	ug/l	07/02/14 09:20	EPA 8260B	wlm	
Naphthalene	<1.00		1.00	ug/l	07/01/14 09:46	EPA 8260B	wlm	
Surrogate: 4-Bromofluorobenzene		*91.4 %*	*70-130*		*07/01/14 09:46*	*EPA 8260B*	wlm	
Surrogate: 1,2-Dichloroethane-d4		*122 %*	*70-130*		*07/01/14 09:46*	*EPA 8260B*	wlm	
Surrogate: Fluorobenzene		*113 %*	*70-130*		*07/01/14 09:46*	*EPA 8260B*	wlm	

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	13-17313-01	**Reported:**
State College PA, 16801	Collector:	CLIENT	08/26/14 15:31
Project Manager: Orion Cook	Number of Containers:	43	

Client Sample ID: **MW-21S** **Date/Time Sampled:** 06/24/14 09:56

Laboratory Sample ID: **4F25127-19 (Water/Grab)**

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	* Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
Benzene	9.41		1.00	ug/l	07/01/14 10:39	EPA 8260B	wlm	
Toluene	<1.00		1.00	ug/l	07/01/14 10:39	EPA 8260B	wlm	
Ethylbenzene	<1.00		1.00	ug/l	07/01/14 10:39	EPA 8260B	wlm	
Xylenes (total)	<2.00		2.00	ug/l	07/01/14 10:39	EPA 8260B	wlm	
Isopropylbenzene	<1.00		1.00	ug/l	07/01/14 10:39	EPA 8260B	wlm	
Methyl tert-butyl ether	19.1		1.00	ug/l	07/01/14 10:39	EPA 8260B	wlm	
Naphthalene	<1.00		1.00	ug/l	07/01/14 10:39	EPA 8260B	wlm	
Surrogate: 4-Bromofluorobenzene		*90.3 %*	*70-130*		*07/01/14 10:39*	*EPA 8260B*	wlm	
Surrogate: 1,2-Dichloroethane-d4		*122 %*	*70-130*		*07/01/14 10:39*	*EPA 8260B*	wlm	
Surrogate: Fluorobenzene		*112 %*	*70-130*		*07/01/14 10:39*	*EPA 8260B*	wlm	

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	13-17313-01	**Reported:**
State College PA, 16801	Collector:	CLIENT	08/26/14 15:31
Project Manager: Orion Cook	Number of Containers:	43	

Client Sample ID: **MW-22S** **Date/Time Sampled:** 06/24/14 13:15

Laboratory Sample ID: **4F25127-20 (Water/Grab)**

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	* Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
Benzene	1280		20.0	ug/l	07/03/14 13:11	EPA 8260B	mtc	
Toluene	63.0		2.00	ug/l	07/02/14 13:14	EPA 8260B	mtc	
Ethylbenzene	234		2.00	ug/l	07/02/14 13:14	EPA 8260B	mtc	
Xylenes (total)	373		4.00	ug/l	07/02/14 13:14	EPA 8260B	mtc	
Isopropylbenzene	71.1		2.00	ug/l	07/02/14 13:14	EPA 8260B	mtc	
Methyl tert-butyl ether	154		2.00	ug/l	07/02/14 13:14	EPA 8260B	mtc	
Naphthalene	163		2.00	ug/l	07/02/14 13:14	EPA 8260B	mtc	
Surrogate: 4-Bromofluorobenzene		*96.3 %*	*70-130*		*07/02/14 13:14*	*EPA 8260B*	mtc	
Surrogate: 1,2-Dichloroethane-d4		*91.3 %*	*70-130*		*07/02/14 13:14*	*EPA 8260B*	mtc	
Surrogate: Fluorobenzene		*100 %*	*70-130*		*07/02/14 13:14*	*EPA 8260B*	mtc	

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	13-17313-01	**Reported:**
State College PA, 16801	Collector:	CLIENT	08/26/14 15:31
Project Manager: Orion Cook	Number of Containers:	43	

Client Sample ID: MW-10M **Date/Time Sampled:** 06/24/14 14:00

Laboratory Sample ID: 4F25127-21 (Water/Grab)

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	* Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
Benzene	<1.00		1.00	ug/l	07/01/14 11:07	EPA 8260B	wlm	
Toluene	<1.00		1.00	ug/l	07/01/14 11:07	EPA 8260B	wlm	
Ethylbenzene	<1.00		1.00	ug/l	07/01/14 11:07	EPA 8260B	wlm	
Xylenes (total)	<2.00		2.00	ug/l	07/01/14 11:07	EPA 8260B	wlm	
Isopropylbenzene	<1.00		1.00	ug/l	07/01/14 11:07	EPA 8260B	wlm	
Methyl tert-butyl ether	13.0		1.00	ug/l	07/01/14 11:07	EPA 8260B	wlm	
Naphthalene	<1.00		1.00	ug/l	07/01/14 11:07	EPA 8260B	wlm	
Surrogate: 4-Bromofluorobenzene		*89.2 %*	*70-130*		*07/01/14 11:07*	*EPA 8260B*	wlm	
Surrogate: 1,2-Dichloroethane-d4		*124 %*	*70-130*		*07/01/14 11:07*	*EPA 8260B*	wlm	
Surrogate: Fluorobenzene		*109 %*	*70-130*		*07/01/14 11:07*	*EPA 8260B*	wlm	

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	13-17313-01	**Reported:**
State College PA, 16801	Collector:	CLIENT	08/26/14 15:31
Project Manager: Orion Cook	Number of Containers:	43	

Client Sample ID: T.B. **Date/Time Sampled:** 06/24/14 00:00

Laboratory Sample ID: 4F25127-22 (Water/Trip Blank)

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	* Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
Benzene	<1.00		1.00	ug/l	07/01/14 11:35	EPA 8260B	wlm	
Toluene	<1.00		1.00	ug/l	07/01/14 11:35	EPA 8260B	wlm	
Ethylbenzene	<1.00		1.00	ug/l	07/01/14 11:35	EPA 8260B	wlm	
Xylenes (total)	<2.00		2.00	ug/l	07/01/14 11:35	EPA 8260B	wlm	
Isopropylbenzene	<1.00		1.00	ug/l	07/01/14 11:35	EPA 8260B	wlm	
Methyl tert-butyl ether	<1.00		1.00	ug/l	07/01/14 11:35	EPA 8260B	wlm	
Naphthalene	<1.00		1.00	ug/l	07/01/14 11:35	EPA 8260B	wlm	
Surrogate: 4-Bromofluorobenzene		*89.8 %*	*70-130*		*07/01/14 11:35*	*EPA 8260B*	wlm	
Surrogate: 1,2-Dichloroethane-d4		*127 %*	*70-130*		*07/01/14 11:35*	*EPA 8260B*	wlm	
Surrogate: Fluorobenzene		*111 %*	*70-130*		*07/01/14 11:35*	*EPA 8260B*	wlm	

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	13-17313-01	**Reported:**
State College PA, 16801	Collector:	CLIENT	08/26/14 15:31
Project Manager: Orion Cook	Number of Containers:	43	

Definitions

If surrogate values are not within the indicated range, then the results are considered to be estimated.

Reporting limits are adjusted accordingly when samples are analyzed at a dilution due to the matrix.

The following analyses are to be performed immediately upon sampling: pH, sulfite, chlorine residual, dissolved oxygen, filtration for ortho phosphorus, and ferrous iron. The date and time reported reflect the time the samples were analyzed at the laboratory.

MBAS, calculated as LAS, mol wt 348

If the solid sample weight for VOC analysis does not fall within the 3.5-6.5 gram range, the results are considered estimated values.

Samples collected by Fairway Laboratories' personnel are done so in accordance with Standard Operating Procedures established by Fairway Laboratories.

*	P indicates analysis performed by Fairway Laboratories, Inc. at the Pennsdale location. This location is PaDEP Chapter 252 certified.
<	Represents "less than" - indicates that the result was less than the reporting limit.
MDL	Method Detection Limit - is the lowest or minimum level that provides 99% confidence level that the analyte is detected. Any reported result values that are less than the RL are considered estimated values.
RL	Reporting Limit - is the lowest or minimum level at which the analyte can be quantified.
[CALC]	Indicates a calculated result. Calculations use results from other analyses performed under accredited methods.

4F25127-01

SAMPLING, CHAIN OF CUSTODY AND ANALYSES RECORD FOR SOIL, GROUNDWATER AND AIR MONITORING PA Nº 0636

SAMPLING PLACE Dunbar
OWNER
ADDRESS Dunbar, PA
PROJECT NAME Fmr. Dunbar Amoco

CC FIELD REP. JDT RS
DATE 6/24/14
WEATHER Sun, 80s
PROJECT NO. 13-17313-01
ATTENTION DWS or OBC

FIRM RESPONSIBLE FOR SAMPLING
Converse Consultants
2738 West College Avenue
State College, Pennsylvania 16801
814-234-3223
Fax 814-234-3255

1 of 2

	STATION NO. OR SAMPLE IDENT.	TIME	DEPTH TO WATER (FEET) DATUM	PURGING METHOD / SAMPLE DEPTH (FT.) INTERVAL	AMOUNT PURGED (GALS)	SAMPLING METHOD	CONTAINER DESCRIPTION: 40 ml HCl	pH	SPECIFIC CONDUCTANCE (μ mohs/cm.)	TEMP. °C	ANALYSIS REQUEST / COMMENTS
1	MW-3	2:55	12.48	Bailer	34	Bailer	2	8.4	603	18.1	(1998 PADEP Petroleum
2	MW-4	1:25	34.49	↓	30	↓		8.3	1968	17.0	Short List)
3	MW-6	3:20	27.56		23.5			8.8	619	16.1	
4	MW-7	12:45	44.35		3			8.1	1670	18.9	
5	MW-8	2:30	36.91		6.5			8.8	1260	17.9	
6	MW-10	2:00	34.45	↓	7.5			8.0	1575	19.1	
7	MW-10S	2:15	13.79	Pump	4			9.0	756	18.7	
8	MW-12	11:40	15.81	Bailer	3			7.8	1407	16.5	
9	MW-12S	11:30	37.95	Pump	6			8.0	1388	20.6	
10	MW-13	10:55	13.90	↓	3			7.7	1262	15.7	
11	MW-13S	11:00	32.27	Bailer	8.5			8.1	1397	15.9	
12	MW-14	10:20	13.15	Pump	8			7.8	971	14.3	
13	MW-15S	10:30	10.58	↓	9.5	↓	↓	7.9	924	15.7	↓

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
[signature]	6/25/14	11:15	
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
	6-25-14	1330	[signature]
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
[signature]	6-25-14	1545	[signature] 6-25-14 1545

RECEIVING LABORATORY
ADDRESS
DATE RECEIVED TIME
ALL SAMPLES REC'D. INTACT ☐ YES ☐ NO
LIST SAMPLES MISSING/DAMAGED
ACCEPTED BY

1/92

DISTRIBUTION: *WHITE*—WITH SHIPMENT TO LAB. *CANARY*—CONVERSE. *PINK*—TO OWNER. *GOLDENROD*—RETAINED BY FIELD REP.

4F2512702

PA № 0637

SAMPLING, CHAIN OF CUSTODY AND ANALYSES RECORD FOR SOIL, GROUNDWATER AND AIR MONITORING

SAMPLING PLACE Dunbar
OWNER
ADDRESS Dunbar, PA
PROJECT NAME Fmr. Dunbar Amoco

CC FIELD REP. JOT RS
DATE 6/24/14
WEATHER Sun, 80s
PROJECT NO. 13-1731-01
ATTENTION DWS or OBC

FIRM RESPONSIBLE FOR SAMPLING
Converse Consultants
2738 West College Avenue
State College, Pennsylvania 16801
814-234-3223
Fax 814-234-3255

2 of 2

	STATION NO. OR SAMPLE IDENT.	TIME	DEPTH TO WATER (FEET) DATUM	PURGING METHOD / SAMPLE DEPTH (FT.) INTERVAL	AMOUNT PURGED (GALS)	SAMPLING METHOD	CONTAINER DESCRIPTION: 40 mL HCl	pH	SPECIFIC CONDUCTANCE (μ mohs/cm.)	TEMP. °C	ANALYSIS REQUEST / COMMENTS
14	MW-16	10:35	33.58	Bailer	13	Bailer	2	8.2	768	15.6	(1998 PADEP Petroleum
15	MW-17	10:12	38.95	↓	10			8.0	876	15.6	Short List)
16	MW-18S	12:20	11.95	Pump	9			8.6	1071	18.1	
17	MW-19S	9:18	12.20		8.5			7.8	631	14.8	
18	MW-20S	9:36	8.05		10.5			8.3	759	14.2	
19	MW-21S	9:56	4.65		12.5			8.1	649	13.7	
20	MW-22S	1:15	13.05	↓	8.5			8.1	1036	16.9	
21	MW-10M	2:00	34.45	Bailer	7.5	↓	↓	8.0	1575	19.1	↓

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
[signature]	6/25/14	11:15	
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
	6-25-14	1330	[signature]
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
[signature]	6-25-14	1545	[signature] 6-25-14 15:45

RECEIVING LABORATORY
ADDRESS
DATE RECEIVED TIME
ALL SAMPLES REC'D. INTACT ☐ YES ☐ NO
LIST SAMPLES MISSING/DAMAGED
ACCEPTED BY

1/92

DISTRIBUTION: *WHITE*—WITH SHIPMENT TO LAB. *CANARY*—CONVERSE. *PINK*—TO OWNER. *GOLDENROD*—RETAINED BY FIELD REP.

SOP FLI0601-002 Revision 17 Date: June 18, 2014 Page of

Chain of Custody Receiving Document

Page ___ of ___

Receiver: _____

Date/Time of this check: 6-25-14 17:10 Client: Converse Lab # 4F25127-03

Received on ICE? Y ☐ * **Sample Temperature when delivered to the Lab:** 5.2 **Acceptable?** Y ☐ * **or In cool down process?** ☐ *

Custody Seals? Y Intact? Y

COC/Labels on bottles agree? Y ☐ * Correct containers for all the analysis requested? Y ☐ * Matrix: Water

COC #	Number and Type of BOTTLES										Comments
	Poly Non-Pres.	Poly H2SO4	Poly HNO3	Amber H2SO4	Amber Non-Pres.	Poly NaOH	VOCS (Head space?)	Other ☐ *	Properly Preserved *	Bacti	
1							Diff				
21 TB							Diff				

* DEVIATION PRESENT:		CLIENT CALLED:	CLIENT RESPONSE:	
⊗ No Ice	( )	YES ( )	Proceed with analysis; qualify data	( )
⊗ Not at Proper Temperature	( )	By Whom:	Will Resample	( )
⊗ Wrong Container	( )		Provided Information	( )
⊗ Missing Information:	( )	_____ Date: _____	No Response; Proceed and qualified	( )
			Client Contact: _____ Date: _____	

* Comments: _____

This is a date sensitive document and may not be current after June 20, 2014.

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(570) 494-6380
PaDEP: PA 41-04684

State Certifications: MD 275, WV 364

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	13-17313-01	**Reported:**
State College PA, 16801	Collector:	CLIENT	09/10/14 14:45
Project Manager: Orion Cook	Number of Containers:	19	

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Sample Type	Date Sampled	Date Received
MW-10S	4H29071-01	Water	Grab	08/28/14 14:25	08/29/14 15:15
MW-12S	4H29071-02	Water	Grab	08/28/14 12:40	08/29/14 15:15
MW-13S	4H29071-03	Water	Grab	08/28/14 12:07	08/29/14 15:15
MW-18S	4H29071-04	Water	Grab	08/28/14 13:21	08/29/14 15:15
MW-19S	4H29071-05	Water	Grab	08/28/14 10:35	08/29/14 15:15
MW-20S	4H29071-06	Water	Grab	08/28/14 10:55	08/29/14 15:15
MW-21S	4H29071-07	Water	Grab	08/28/14 11:25	08/29/14 15:15
MW-22S	4H29071-08	Water	Grab	08/28/14 12:44	08/29/14 15:15
MW-12M	4H29071-09	Water	Grab	08/28/14 12:40	08/29/14 15:15
TRIP BLANK	4H29071-10	Water	Trip Blank	08/28/14 00:00	08/29/14 15:15

Fairway Laboratories, Inc.

Reviewed and Submitted by:

Michael P. Tyler
Laboratory Director

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	13-17313-01	**Reported:**
State College PA, 16801	Collector:	CLIENT	09/10/14 14:45
Project Manager: Orion Cook	Number of Containers:	19	

Client Sample ID: **MW-10S** **Date/Time Sampled:** 08/28/14 14:25

Laboratory Sample ID: **4H29071-01 (Water/Grab)**

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	* Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
Benzene	658		10.0	ug/l	09/05/14 01:41	EPA 8260B	mtc	
Toluene	48.1		10.0	ug/l	09/05/14 01:41	EPA 8260B	mtc	
Ethylbenzene	680		10.0	ug/l	09/05/14 01:41	EPA 8260B	mtc	
Xylenes (total)	176		20.0	ug/l	09/05/14 01:41	EPA 8260B	mtc	
Isopropylbenzene	130		10.0	ug/l	09/05/14 01:41	EPA 8260B	mtc	
Methyl tert-butyl ether	54.9		10.0	ug/l	09/05/14 01:41	EPA 8260B	mtc	
Naphthalene	256		10.0	ug/l	09/05/14 01:41	EPA 8260B	mtc	
Surrogate: 4-Bromofluorobenzene		*99.0 %*	*70-130*		*09/05/14 01:41*	*EPA 8260B*	mtc	
Surrogate: 1,2-Dichloroethane-d4		*86.5 %*	*70-130*		*09/05/14 01:41*	*EPA 8260B*	mtc	
Surrogate: Fluorobenzene		*97.1 %*	*70-130*		*09/05/14 01:41*	*EPA 8260B*	mtc	

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	13-17313-01	**Reported:**
State College PA, 16801	Collector:	CLIENT	09/10/14 14:45
Project Manager: Orion Cook	Number of Containers:	19	

Client Sample ID: **MW-12S** **Date/Time Sampled:** 08/28/14 12:40

Laboratory Sample ID: **4H29071-02 (Water/Grab)**

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	* Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
Benzene	2050		100	ug/l	09/05/14 17:19	EPA 8260B	mtc	
Toluene	267		100	ug/l	09/05/14 17:19	EPA 8260B	mtc	
Ethylbenzene	787		100	ug/l	09/05/14 17:19	EPA 8260B	mtc	
Xylenes (total)	888		200	ug/l	09/05/14 17:19	EPA 8260B	mtc	
Isopropylbenzene	132		100	ug/l	09/05/14 17:19	EPA 8260B	mtc	
Methyl tert-butyl ether	123		100	ug/l	09/05/14 17:19	EPA 8260B	mtc	
Naphthalene	381		100	ug/l	09/05/14 17:19	EPA 8260B	mtc	
Surrogate: 4-Bromofluorobenzene		*96.1 %*	*70-130*		*09/05/14 17:19*	*EPA 8260B*	mtc	
Surrogate: 1,2-Dichloroethane-d4		*87.1 %*	*70-130*		*09/05/14 17:19*	*EPA 8260B*	mtc	
Surrogate: Fluorobenzene		*100 %*	*70-130*		*09/05/14 17:19*	*EPA 8260B*	mtc	

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	13-17313-01	**Reported:**
State College PA, 16801	Collector:	CLIENT	09/10/14 14:45
Project Manager: Orion Cook	Number of Containers:	19	

Client Sample ID: **MW-13S** **Date/Time Sampled:** 08/28/14 12:07

Laboratory Sample ID: **4H29071-03 (Water/Grab)**

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	* Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
Benzene	599		20.0	ug/l	09/08/14 15:24	EPA 8260B	mtc	
Toluene	68.6		2.00	ug/l	09/06/14 01:07	EPA 8260B	mtc	
Ethylbenzene	740		20.0	ug/l	09/08/14 15:24	EPA 8260B	mtc	
Xylenes (total)	418		4.00	ug/l	09/06/14 01:07	EPA 8260B	mtc	
Isopropylbenzene	111		2.00	ug/l	09/06/14 01:07	EPA 8260B	mtc	
Methyl tert-butyl ether	74.1		2.00	ug/l	09/06/14 01:07	EPA 8260B	mtc	
Naphthalene	206		20.0	ug/l	09/08/14 15:24	EPA 8260B	mtc	
Surrogate: 4-Bromofluorobenzene		*97.6 %*	*70-130*		*09/06/14 01:07*	*EPA 8260B*	mtc	
Surrogate: 1,2-Dichloroethane-d4		*87.4 %*	*70-130*		*09/06/14 01:07*	*EPA 8260B*	mtc	
Surrogate: Fluorobenzene		*98.1 %*	*70-130*		*09/06/14 01:07*	*EPA 8260B*	mtc	

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	13-17313-01	**Reported:**
State College PA, 16801	Collector:	CLIENT	09/10/14 14:45
Project Manager: Orion Cook	Number of Containers:	19	

Client Sample ID: **MW-18S** **Date/Time Sampled:** 08/28/14 13:21

Laboratory Sample ID: **4H29071-04 (Water/Grab)**

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	* Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
Benzene	554		50.0	ug/l	09/04/14 23:31	EPA 8260B	mtc	
Toluene	149		50.0	ug/l	09/04/14 23:31	EPA 8260B	mtc	
Ethylbenzene	884		50.0	ug/l	09/04/14 23:31	EPA 8260B	mtc	
Xylenes (total)	2600		100	ug/l	09/04/14 23:31	EPA 8260B	mtc	
Isopropylbenzene	120		50.0	ug/l	09/04/14 23:31	EPA 8260B	mtc	
Methyl tert-butyl ether	134		50.0	ug/l	09/04/14 23:31	EPA 8260B	mtc	
Naphthalene	206		50.0	ug/l	09/04/14 23:31	EPA 8260B	mtc	
Surrogate: 4-Bromofluorobenzene		*97.0 %*	*70-130*		*09/04/14 23:31*	*EPA 8260B*	mtc	
Surrogate: 1,2-Dichloroethane-d4		*89.9 %*	*70-130*		*09/04/14 23:31*	*EPA 8260B*	mtc	
Surrogate: Fluorobenzene		*102 %*	*70-130*		*09/04/14 23:31*	*EPA 8260B*	mtc	

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	13-17313-01	**Reported:**
State College PA, 16801	Collector:	CLIENT	09/10/14 14:45
Project Manager: Orion Cook	Number of Containers:	19	

Client Sample ID: **MW-19S** **Date/Time Sampled:** 08/28/14 10:35

Laboratory Sample ID: **4H29071-05 (Water/Grab)**

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	* Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
Benzene	10.4		2.00	ug/l	09/06/14 00:01	EPA 8260B	mtc	
Toluene	<2.00		2.00	ug/l	09/06/14 00:01	EPA 8260B	mtc	
Ethylbenzene	<2.00		2.00	ug/l	09/06/14 00:01	EPA 8260B	mtc	
Xylenes (total)	<4.00		4.00	ug/l	09/06/14 00:01	EPA 8260B	mtc	
Isopropylbenzene	<2.00		2.00	ug/l	09/06/14 00:01	EPA 8260B	mtc	
Methyl tert-butyl ether	16.1		2.00	ug/l	09/06/14 00:01	EPA 8260B	mtc	
Naphthalene	<2.00		2.00	ug/l	09/06/14 00:01	EPA 8260B	mtc	
Surrogate: 4-Bromofluorobenzene		*95.3 %*	*70-130*		*09/06/14 00:01*	*EPA 8260B*	mtc	
Surrogate: 1,2-Dichloroethane-d4		*87.9 %*	*70-130*		*09/06/14 00:01*	*EPA 8260B*	mtc	
Surrogate: Fluorobenzene		*101 %*	*70-130*		*09/06/14 00:01*	*EPA 8260B*	mtc	

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	13-17313-01	**Reported:**
State College PA, 16801	Collector:	CLIENT	09/10/14 14:45
Project Manager: Orion Cook	Number of Containers:	19	

Client Sample ID: **MW-20S** **Date/Time Sampled:** 08/28/14 10:55

Laboratory Sample ID: **4H29071-06 (Water/Grab)**

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	* Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
Benzene	15.3		2.00	ug/l	09/06/14 00:34	EPA 8260B	mtc	
Toluene	<2.00		2.00	ug/l	09/06/14 00:34	EPA 8260B	mtc	
Ethylbenzene	<2.00		2.00	ug/l	09/06/14 00:34	EPA 8260B	mtc	
Xylenes (total)	<4.00		4.00	ug/l	09/06/14 00:34	EPA 8260B	mtc	
Isopropylbenzene	<2.00		2.00	ug/l	09/06/14 00:34	EPA 8260B	mtc	
Methyl tert-butyl ether	75.1		2.00	ug/l	09/06/14 00:34	EPA 8260B	mtc	
Naphthalene	<2.00		2.00	ug/l	09/06/14 00:34	EPA 8260B	mtc	
Surrogate: 4-Bromofluorobenzene		*93.5 %*	*70-130*		*09/06/14 00:34*	*EPA 8260B*	mtc	
Surrogate: 1,2-Dichloroethane-d4		*89.7 %*	*70-130*		*09/06/14 00:34*	*EPA 8260B*	mtc	
Surrogate: Fluorobenzene		*101 %*	*70-130*		*09/06/14 00:34*	*EPA 8260B*	mtc	

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	13-17313-01	**Reported:**
State College PA, 16801	Collector:	CLIENT	09/10/14 14:45
Project Manager: Orion Cook	Number of Containers:	19	

Client Sample ID: **MW-21S** **Date/Time Sampled:** 08/28/14 11:25

Laboratory Sample ID: **4H29071-07 (Water/Grab)**

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	* Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
Benzene	<1.00		1.00	ug/l	09/03/14 06:09	EPA 8260B	wlm	
Toluene	<1.00		1.00	ug/l	09/03/14 06:09	EPA 8260B	wlm	
Ethylbenzene	<1.00		1.00	ug/l	09/03/14 06:09	EPA 8260B	wlm	
Xylenes (total)	<2.00		2.00	ug/l	09/03/14 06:09	EPA 8260B	wlm	
Isopropylbenzene	<1.00		1.00	ug/l	09/03/14 06:09	EPA 8260B	wlm	
Methyl tert-butyl ether	<1.00		1.00	ug/l	09/03/14 06:09	EPA 8260B	wlm	
Naphthalene	<1.00		1.00	ug/l	09/03/14 06:09	EPA 8260B	wlm	
Surrogate: 4-Bromofluorobenzene		*98.9 %*	*70-130*		*09/03/14 06:09*	*EPA 8260B*	wlm	
Surrogate: 1,2-Dichloroethane-d4		*113 %*	*70-130*		*09/03/14 06:09*	*EPA 8260B*	wlm	
Surrogate: Fluorobenzene		*97.2 %*	*70-130*		*09/03/14 06:09*	*EPA 8260B*	wlm	

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	13-17313-01	**Reported:**
State College PA, 16801	Collector:	CLIENT	09/10/14 14:45
Project Manager: Orion Cook	Number of Containers:	19	

Client Sample ID: **MW-22S** **Date/Time Sampled:** 08/28/14 12:44

Laboratory Sample ID: **4H29071-08 (Water/Grab)**

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	* Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
Benzene	585		20.0	ug/l	09/05/14 18:52	EPA 8260B	mtc	
Toluene	48.0		20.0	ug/l	09/05/14 18:52	EPA 8260B	mtc	
Ethylbenzene	332		20.0	ug/l	09/05/14 18:52	EPA 8260B	mtc	
Xylenes (total)	420		40.0	ug/l	09/05/14 18:52	EPA 8260B	mtc	
Isopropylbenzene	61.0		20.0	ug/l	09/05/14 18:52	EPA 8260B	mtc	
Methyl tert-butyl ether	163		20.0	ug/l	09/05/14 18:52	EPA 8260B	mtc	
Naphthalene	147		20.0	ug/l	09/05/14 18:52	EPA 8260B	mtc	
Surrogate: 4-Bromofluorobenzene		*96.6 %*	*70-130*		*09/05/14 18:52*	*EPA 8260B*	mtc	
Surrogate: 1,2-Dichloroethane-d4		*88.8 %*	*70-130*		*09/05/14 18:52*	*EPA 8260B*	mtc	
Surrogate: Fluorobenzene		*100 %*	*70-130*		*09/05/14 18:52*	*EPA 8260B*	mtc	

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	13-17313-01	**Reported:**
State College PA, 16801	Collector:	CLIENT	09/10/14 14:45
Project Manager: Orion Cook	Number of Containers:	19	

Client Sample ID: MW-12M **Date/Time Sampled:** 08/28/14 12:40

Laboratory Sample ID: 4H29071-09 (Water/Grab)

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	* Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
Benzene	852		100	ug/l	09/05/14 17:49	EPA 8260B	mtc	
Toluene	<100		100	ug/l	09/05/14 17:49	EPA 8260B	mtc	
Ethylbenzene	801		100	ug/l	09/05/14 17:49	EPA 8260B	mtc	
Xylenes (total)	440		200	ug/l	09/05/14 17:49	EPA 8260B	mtc	
Isopropylbenzene	154		100	ug/l	09/05/14 17:49	EPA 8260B	mtc	
Methyl tert-butyl ether	102		100	ug/l	09/05/14 17:49	EPA 8260B	mtc	
Naphthalene	411		100	ug/l	09/05/14 17:49	EPA 8260B	mtc	
Surrogate: 4-Bromofluorobenzene		*95.1 %*	*70-130*		*09/05/14 17:49*	*EPA 8260B*	mtc	
Surrogate: 1,2-Dichloroethane-d4		*88.0 %*	*70-130*		*09/05/14 17:49*	*EPA 8260B*	mtc	
Surrogate: Fluorobenzene		*101 %*	*70-130*		*09/05/14 17:49*	*EPA 8260B*	mtc	

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PaDEP: PA 41-04684

State Certifications: MD 275, WV 364

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	13-17313-01	**Reported:**
State College PA, 16801	Collector:	CLIENT	09/10/14 14:45
Project Manager: Orion Cook	Number of Containers:	19	

Client Sample ID: **TRIP BLANK** **Date/Time Sampled:** 08/28/14 00:00

Laboratory Sample ID: **4H29071-10 (Water/Trip Blank)**

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	* Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
Benzene	<1.00		1.00	ug/l	09/03/14 21:32	EPA 8260B	wlm	
Toluene	<1.00		1.00	ug/l	09/03/14 21:32	EPA 8260B	wlm	
Ethylbenzene	<1.00		1.00	ug/l	09/03/14 21:32	EPA 8260B	wlm	
Xylenes (total)	<2.00		2.00	ug/l	09/03/14 21:32	EPA 8260B	wlm	
Isopropylbenzene	<1.00		1.00	ug/l	09/03/14 21:32	EPA 8260B	wlm	
Methyl tert-butyl ether	<1.00		1.00	ug/l	09/03/14 21:32	EPA 8260B	wlm	
Naphthalene	<1.00		1.00	ug/l	09/03/14 21:32	EPA 8260B	wlm	
Surrogate: 4-Bromofluorobenzene		*101 %*	*70-130*		*09/03/14 21:32*	*EPA 8260B*	wlm	
Surrogate: 1,2-Dichloroethane-d4		*109 %*	*70-130*		*09/03/14 21:32*	*EPA 8260B*	wlm	
Surrogate: Fluorobenzene		*101 %*	*70-130*		*09/03/14 21:32*	*EPA 8260B*	wlm	

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	13-17313-01	**Reported:**
State College PA, 16801	Collector:	CLIENT	09/10/14 14:45
Project Manager: Orion Cook	Number of Containers:	19	

Definitions

If surrogate values are not within the indicated range, then the results are considered to be estimated.

Reporting limits are adjusted accordingly when samples are analyzed at a dilution due to the matrix.

The following analyses are to be performed immediately upon sampling: pH, sulfite, chlorine residual, dissolved oxygen, filtration for ortho phosphorus, and ferrous iron. The date and time reported reflect the time the samples were analyzed at the laboratory.

MBAS, calculated as LAS, mol wt 348

If the solid sample weight for VOC analysis does not fall within the 3.5-6.5 gram range, the results are considered estimated values.

Samples collected by Fairway Laboratories' personnel are done so in accordance with Standard Operating Procedures established by Fairway Laboratories.

*	P indicates analysis performed by Fairway Laboratories, Inc. at the Pennsdale location. This location is PaDEP Chapter 252 certified.
<	Represents "less than" - indicates that the result was less than the reporting limit.
MDL	Method Detection Limit - is the lowest or minimum level that provides 99% confidence level that the analyte is detected. Any reported result values that are less than the RL are considered estimated values.
RL	Reporting Limit - is the lowest or minimum level at which the analyte can be quantified.
[CALC]	Indicates a calculated result. Calculations use results from other analyses performed under accredited methods.

SAMPLING, CHAIN OF CUSTODY AND ANALYSES RECORD FOR SOIL, GROUNDWATER AND AIR MONITORING **PA**

SAMPLING PLACE Former Dunbar Amoco
OWNER Mick McGuire
ADDRESS Dunbar, PA
PROJECT NAME Former Dunbar Amoco

CC FIELD REP. TJT
DATE 8/28/14
WEATHER M. Sunny, mid-70s
PROJECT NO. 13-17313-01
ATTENTION DWS or OBC

FIRM RESPONSIBLE FOR SAMPLING
Converse Consultants
2738 West College Avenue
State College, Pennsylvania 16801
814-234-3223
Fax 814-234-3255

4H2907 #1 1 of 2

	STATION NO. OR SAMPLE IDENT.	TIME	DEPTH TO WATER (FEET) DATUM	PURGING METHOD / SAMPLE DEPTH (FT.) INTERVAL	AMOUNT PURGED (GALS)	SAMPLING METHOD	CONTAINER DESCRIPTION (40 mL HCl)	pH	SPECIFIC CONDUCTANCE (μ mohs/cm.)	TEMP. °C	ANALYSIS REQUEST / COMMENTS
1	MW-10S	2:25	14.45	Pump	7.5	Bailer		7.3	727	18.5	(1998 PADEP Petroleum
2	MW-12S	12:40	17.65	Bailer	4.25	Bailer		7.4	362	16.3	Short List)
3	MW-13S	12:07	22.34	Bailer	2.25	↓		7.2	1504	16.7	↓
4	MW-18S	1:21	13.69	Pump	7.75			7.2	450	15.9	
5	MW-19S	10:35	12.47	↓	8.5			7.9	873	15.5	
6	MW-20S	10:55	8.91		10			7.9	655	15.3	
7	MW-21S	11:25	4.83		12			7.8	520	16.7	
8	MW-22S	12:44	14.48	↓	7			7.4	455	16.5	
9	MW-12M	12:40	17.65	Bailer	4.25	↓		7.4	362	16.3	↓

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
Tate / Tate	8/29/14		DSA
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
DSA	8/29/14	1515	
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
			Nye 8/29/14 1515

RECEIVING LABORATORY 825
8/29/14 ADDRESS

DATE RECEIVED ____ TIME ____
ALL SAMPLES REC'D. INTACT ☐ YES ☐ NO
LIST SAMPLES MISSING/DAMAGED ____
ACCEPTED BY ____

1/92

DISTRIBUTION: *WHITE*—WITH SHIPMENT TO LAB. *CANARY*—CONVERSE. *PINK*—RETAINED BY FIELD REP.

SOP FLI0601-002 Revision 17 Date: June 18, 2014 Page of

Chain of Custody Receiving Document

Page 2 of 2

Receiver: CM

Date/Time of this check: 8-29-14 10:20 Client: Cowurse Lab # 4H29071 #2

Received on ICE? Y ☐ * **Sample Temperature when delivered to the Lab:** 3.6 **Acceptable?** Y ☐ * **or In cool down process?** ☐ *

Custody Seals? Y Intact? Y

COC/Labels on bottles agree? Y ☐* Correct containers for all the analysis requested? Y ☐ * Matrix: WSW

COC #	Number and Type of BOTTLES										Comments
	Poly Non-Pres.	Poly H2SO4	Poly HNO3	Amber H2SO4	Amber Non-Pres.	Poly NaOH	VOCS (Head space?)	Other ☐ *	Properly Preserved ☒ *	Bacti	
1							2 HCl				
9											
T.B.							HCl				

* DEVIATION PRESENT:		CLIENT CALLED:	CLIENT RESPONSE:	
☹ No Ice	( )	YES ( )	Proceed with analysis; qualify data	( )
☹ Not at Proper Temperature	( )	By Whom:	Will Resample	( )
☹ Wrong Container	( )		Provided Information	( )
☹ Missing Information:	( )	Date:	No Response; Proceed and qualified	( )
			Client Contact: Date:	

* Comments: T.B. Not on COC

This is a date sensitive document and may not be current after August 19, 2014.

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	[none]	**Reported:**
State College PA, 16801	Collector:	CLIENT	10/03/16 10:50
Project Manager: Misty Kauffman	Number of Containers:	15	

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Sample Type	Date Sampled	Date Received
MW-23S	6I23109-01	Water	Grab	09/20/16 11:30	09/23/16 15:40
MW-24S	6I23109-02	Water	Grab	09/20/16 12:20	09/23/16 15:40
MW-25S	6I23109-03	Water	Grab	09/20/16 12:00	09/23/16 15:40
MW-26S	6I23109-04	Water	Grab	09/20/16 13:20	09/23/16 15:40
MW-27S	6I23109-05	Water	Grab	09/20/16 13:50	09/23/16 15:40
DUP01	6I23109-06	Water	Grab	09/20/16 11:35	09/23/16 15:40
POND	6I23109-07	Water	Grab	09/20/16 12:40	09/23/16 15:40
TB	6I23109-08	Water	Trip Blank	09/20/16 00:00	09/23/16 15:40

Refer to receiving document. CB

Fairway Laboratories, Inc.

Reviewed and Submitted by:

Michael P. Tyler
Laboratory Director

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	[none]	**Reported:**
State College PA, 16801	Collector:	CLIENT	10/03/16 10:50
Project Manager: Misty Kauffman	Number of Containers:	15	

Client Sample ID: **MW-23S** **Date/Time Sampled:** 09/20/16 11:30

Laboratory Sample ID: **6I23109-01 (Water/Grab)**

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	* Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
Benzene	<1.00		1.00	ug/l	09/27/16 06:53	EPA 8260B	sap	
Toluene	<1.00		1.00	ug/l	09/27/16 06:53	EPA 8260B	sap	
Ethylbenzene	<1.00		1.00	ug/l	09/27/16 06:53	EPA 8260B	sap	
Xylenes (total)	<2.00		2.00	ug/l	09/27/16 06:53	EPA 8260B	sap	
Isopropylbenzene	<1.00		1.00	ug/l	09/27/16 06:53	EPA 8260B	sap	
Methyl tert-butyl ether	2.03		1.00	ug/l	09/27/16 06:53	EPA 8260B	sap	
Naphthalene	<1.00		1.00	ug/l	09/27/16 06:53	EPA 8260B	sap	
Surrogate: 4-Bromofluorobenzene		*96.1 %*	*70-130*		*09/27/16 06:53*	*EPA 8260B*	sap	
Surrogate: 1,2-Dichloroethane-d4		*98.8 %*	*70-130*		*09/27/16 06:53*	*EPA 8260B*	sap	
Surrogate: Fluorobenzene		*100 %*	*70-130*		*09/27/16 06:53*	*EPA 8260B*	sap	

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	[none]	**Reported:**
State College PA, 16801	Collector:	CLIENT	10/03/16 10:50
Project Manager: Misty Kauffman	Number of Containers:	15	

Client Sample ID: **MW-24S** **Date/Time Sampled:** 09/20/16 12:20

Laboratory Sample ID: **6I23109-02 (Water/Grab)**

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	* Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
Benzene	<1.00		1.00	ug/l	09/27/16 07:31	EPA 8260B	sap	
Toluene	<1.00		1.00	ug/l	09/27/16 07:31	EPA 8260B	sap	
Ethylbenzene	<1.00		1.00	ug/l	09/27/16 07:31	EPA 8260B	sap	
Xylenes (total)	<2.00		2.00	ug/l	09/27/16 07:31	EPA 8260B	sap	
Isopropylbenzene	<1.00		1.00	ug/l	09/27/16 07:31	EPA 8260B	sap	
Methyl tert-butyl ether	20.2		1.00	ug/l	09/27/16 07:31	EPA 8260B	sap	
Naphthalene	<1.00		1.00	ug/l	09/27/16 07:31	EPA 8260B	sap	
Surrogate: 4-Bromofluorobenzene		*96.5 %*	*70-130*		*09/27/16 07:31*	*EPA 8260B*	sap	
Surrogate: 1,2-Dichloroethane-d4		*100 %*	*70-130*		*09/27/16 07:31*	*EPA 8260B*	sap	
Surrogate: Fluorobenzene		*101 %*	*70-130*		*09/27/16 07:31*	*EPA 8260B*	sap	

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	[none]	**Reported:**
State College PA, 16801	Collector:	CLIENT	10/03/16 10:50
Project Manager: Misty Kauffman	Number of Containers:	15	

Client Sample ID: MW-25S **Date/Time Sampled:** 09/20/16 12:00

Laboratory Sample ID: 6I23109-03 (Water/Grab)

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	* Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
Benzene	<1.00		1.00	ug/l	09/27/16 08:08	EPA 8260B	sap	
Toluene	<1.00		1.00	ug/l	09/27/16 08:08	EPA 8260B	sap	
Ethylbenzene	<1.00		1.00	ug/l	09/27/16 08:08	EPA 8260B	sap	
Xylenes (total)	<2.00		2.00	ug/l	09/27/16 08:08	EPA 8260B	sap	
Isopropylbenzene	<1.00		1.00	ug/l	09/27/16 08:08	EPA 8260B	sap	
Methyl tert-butyl ether	15.7		1.00	ug/l	09/27/16 08:08	EPA 8260B	sap	
Naphthalene	<1.00		1.00	ug/l	09/27/16 08:08	EPA 8260B	sap	
Surrogate: 4-Bromofluorobenzene		*96.6 %*	*70-130*		*09/27/16 08:08*	*EPA 8260B*	sap	
Surrogate: 1,2-Dichloroethane-d4		*100 %*	*70-130*		*09/27/16 08:08*	*EPA 8260B*	sap	
Surrogate: Fluorobenzene		*100 %*	*70-130*		*09/27/16 08:08*	*EPA 8260B*	sap	

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	[none]	**Reported:**
State College PA, 16801	Collector:	CLIENT	10/03/16 10:50
Project Manager: Misty Kauffman	Number of Containers:	15	

Client Sample ID: **MW-26S** **Date/Time Sampled:** 09/20/16 13:20

Laboratory Sample ID: **6I23109-04 (Water/Grab)**

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	* Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
Benzene	2.61		1.00	ug/l	09/27/16 08:46	EPA 8260B	sap	
Toluene	<1.00		1.00	ug/l	09/27/16 08:46	EPA 8260B	sap	
Ethylbenzene	<1.00		1.00	ug/l	09/27/16 08:46	EPA 8260B	sap	
Xylenes (total)	<2.00		2.00	ug/l	09/27/16 08:46	EPA 8260B	sap	
Isopropylbenzene	2.74		1.00	ug/l	09/27/16 08:46	EPA 8260B	sap	
Methyl tert-butyl ether	8.88		1.00	ug/l	09/27/16 08:46	EPA 8260B	sap	
Naphthalene	<1.00		1.00	ug/l	09/27/16 08:46	EPA 8260B	sap	
Surrogate: 4-Bromofluorobenzene		*97.4 %*	*70-130*		*09/27/16 08:46*	*EPA 8260B*	sap	
Surrogate: 1,2-Dichloroethane-d4		*100 %*	*70-130*		*09/27/16 08:46*	*EPA 8260B*	sap	
Surrogate: Fluorobenzene		*101 %*	*70-130*		*09/27/16 08:46*	*EPA 8260B*	sap	

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	[none]	**Reported:**
State College PA, 16801	Collector:	CLIENT	10/03/16 10:50
Project Manager: Misty Kauffman	Number of Containers:	15	

Client Sample ID: **MW-27S** **Date/Time Sampled:** 09/20/16 13:50

Laboratory Sample ID: **6I23109-05 (Water/Grab)**

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	* Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
Benzene	<1.00		1.00	ug/l	09/27/16 09:24	EPA 8260B	sap	
Toluene	<1.00		1.00	ug/l	09/27/16 09:24	EPA 8260B	sap	
Ethylbenzene	<1.00		1.00	ug/l	09/27/16 09:24	EPA 8260B	sap	
Xylenes (total)	<2.00		2.00	ug/l	09/27/16 09:24	EPA 8260B	sap	
Isopropylbenzene	<1.00		1.00	ug/l	09/27/16 09:24	EPA 8260B	sap	
Methyl tert-butyl ether	10.6		1.00	ug/l	09/27/16 09:24	EPA 8260B	sap	
Naphthalene	<1.00		1.00	ug/l	09/27/16 09:24	EPA 8260B	sap	
Surrogate: 4-Bromofluorobenzene		*98.2 %*	*70-130*		*09/27/16 09:24*	*EPA 8260B*	sap	
Surrogate: 1,2-Dichloroethane-d4		*100 %*	*70-130*		*09/27/16 09:24*	*EPA 8260B*	sap	
Surrogate: Fluorobenzene		*101 %*	*70-130*		*09/27/16 09:24*	*EPA 8260B*	sap	

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	[none]	**Reported:**
State College PA, 16801	Collector:	CLIENT	10/03/16 10:50
Project Manager: Misty Kauffman	Number of Containers:	15	

Client Sample ID: **DUP01** **Date/Time Sampled:** 09/20/16 11:35

Laboratory Sample ID: **6I23109-06 (Water/Grab)**

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	* Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
Benzene	<1.00		1.00	ug/l	09/27/16 10:01	EPA 8260B	sap	
Toluene	<1.00		1.00	ug/l	09/27/16 10:01	EPA 8260B	sap	
Ethylbenzene	<1.00		1.00	ug/l	09/27/16 10:01	EPA 8260B	sap	
Xylenes (total)	<2.00		2.00	ug/l	09/27/16 10:01	EPA 8260B	sap	
Isopropylbenzene	<1.00		1.00	ug/l	09/27/16 10:01	EPA 8260B	sap	
Methyl tert-butyl ether	1.94		1.00	ug/l	09/27/16 10:01	EPA 8260B	sap	
Naphthalene	<1.00		1.00	ug/l	09/27/16 10:01	EPA 8260B	sap	
Surrogate: 4-Bromofluorobenzene		*97.6 %*	*70-130*		*09/27/16 10:01*	*EPA 8260B*	sap	
Surrogate: 1,2-Dichloroethane-d4		*102 %*	*70-130*		*09/27/16 10:01*	*EPA 8260B*	sap	
Surrogate: Fluorobenzene		*101 %*	*70-130*		*09/27/16 10:01*	*EPA 8260B*	sap	

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	[none]	**Reported:**
State College PA, 16801	Collector:	CLIENT	10/03/16 10:50
Project Manager: Misty Kauffman	Number of Containers:	15	

Client Sample ID: **POND** **Date/Time Sampled:** 09/20/16 12:40

Laboratory Sample ID: **6I23109-07 (Water/Grab)**

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	* Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
Benzene	<1.00		1.00	ug/l	09/27/16 10:39	EPA 8260B	sap	
Toluene	<1.00		1.00	ug/l	09/27/16 10:39	EPA 8260B	sap	
Ethylbenzene	<1.00		1.00	ug/l	09/27/16 10:39	EPA 8260B	sap	
Xylenes (total)	<2.00		2.00	ug/l	09/27/16 10:39	EPA 8260B	sap	
Isopropylbenzene	<1.00		1.00	ug/l	09/27/16 10:39	EPA 8260B	sap	
Methyl tert-butyl ether	<1.00		1.00	ug/l	09/27/16 10:39	EPA 8260B	sap	
Naphthalene	<1.00		1.00	ug/l	09/27/16 10:39	EPA 8260B	sap	
Surrogate: 4-Bromofluorobenzene		*96.9 %*	*70-130*		*09/27/16 10:39*	*EPA 8260B*	sap	
Surrogate: 1,2-Dichloroethane-d4		*102 %*	*70-130*		*09/27/16 10:39*	*EPA 8260B*	sap	
Surrogate: Fluorobenzene		*101 %*	*70-130*		*09/27/16 10:39*	*EPA 8260B*	sap	

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(814) 946-4306
NELAP: PA 07-062, VA 460212

89 Kristi Road
Pennsdale, PA 17756
(570) 494-6380
PaDEP: PA 41-04684

State Certifications: MD 275, WV 364

FAIRWAY LABORATORIES
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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	[none]	**Reported:**
State College PA, 16801	Collector:	CLIENT	10/03/16 10:50
Project Manager: Misty Kauffman	Number of Containers:	15	

Client Sample ID: TB **Date/Time Sampled:** 09/20/16 00:00

Laboratory Sample ID: 6I23109-08 (Water/Trip Blank)

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	* Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
Benzene	<1.00		1.00	ug/l	09/27/16 11:17	EPA 8260B	sap	
Toluene	<1.00		1.00	ug/l	09/27/16 11:17	EPA 8260B	sap	
Ethylbenzene	<1.00		1.00	ug/l	09/27/16 11:17	EPA 8260B	sap	
Xylenes (total)	<2.00		2.00	ug/l	09/27/16 11:17	EPA 8260B	sap	
Isopropylbenzene	<1.00		1.00	ug/l	09/27/16 11:17	EPA 8260B	sap	
Methyl tert-butyl ether	<1.00		1.00	ug/l	09/27/16 11:17	EPA 8260B	sap	
Naphthalene	<1.00		1.00	ug/l	09/27/16 11:17	EPA 8260B	sap	
Surrogate: 4-Bromofluorobenzene		*97.9 %*	*70-130*		*09/27/16 11:17*	*EPA 8260B*	sap	
Surrogate: 1,2-Dichloroethane-d4		*103 %*	*70-130*		*09/27/16 11:17*	*EPA 8260B*	sap	
Surrogate: Fluorobenzene		*104 %*	*70-130*		*09/27/16 11:17*	*EPA 8260B*	sap	

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Converse		Project:	DUNBAR AMOCO
2738 West College Avenue		Project Number:	[none]
State College PA, 16801		Collector:	CLIENT
Project Manager:	Misty Kauffman	Number of Containers:	15

Reported:
10/03/16 10:50

Definitions

If surrogate values are not within the indicated range, then the results are considered to be estimated.

Reporting limits are adjusted accordingly when samples are analyzed at a dilution due to the matrix.

The following analyses are to be performed immediately upon sampling: pH, sulfite, chlorine residual, dissolved oxygen, filtration for ortho phosphorus, and ferrous iron. The date and time reported reflect the time the samples were analyzed at the laboratory.

MBAS, calculated as LAS, mol wt 348

If the solid sample weight for VOC analysis does not fall within the 3.5-6.5 gram range, the results are considered estimated values.

Unless otherwise noted, all results for solids are reported on a dry weight basis.

Samples collected by Fairway Laboratories' personnel are done so in accordance with Standard Operating Procedures established by Fairway Laboratories.

*	P indicates analysis performed by Fairway Laboratories, Inc. at the Pennsdale location. This location is PaDEP Chapter 252 certified.
<	Represents "less than" - indicates that the result was less than the reporting limit.
MDL	Method Detection Limit - is the lowest or minimum level that provides 99% confidence level that the analyte is detected. Any reported result values that are less than the RL are considered estimated values.
RL	Reporting Limit - is the lowest or minimum level at which the analyte can be quantified.
[CALC]	Indicates a calculated result. Calculations use results from other analyses performed under accredited methods.

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	[none]	**Reported:**
State College PA, 16801	Collector:	CLIENT	10/03/16 10:50
Project Manager: Misty Kauffman	Number of Containers:	15	

Terms & Conditions

Services provided by Fairway Laboratories Inc. are limited to the terms and conditions stated herein, unless otherwise agreed to in a formal contract.

CHAIN OF CUSTODY Fairway Laboratories Inc. ("Fairway," "us" or "we") will initiate a chain-of-custody/request for analysis upon sample receipt unless the client includes a completed form with the received sample(s). Upon request, Fairway will provide chain-of-custody forms for use.

CONFIDENTIALITY Fairway maintains confidentiality in all of our client interactions. The client's consent will be required before releasing information about the services provided.

CONTRACTS All contracts are subject to review and approval by Fairway's legal council. Each contract must be signed by a corporate officer.

PAYMENT/BILLING Unless otherwise set forth in a signed contract or purchase order, terms of payment are "NET 30 Days." The time allowed for payment shall begin based on the invoice date. A 1.5% per month service charge may be added to all unpaid balances beyond the initial 30 days. In its sole discretion, Fairway reserves the right to request payment before services and hold sample results for payment of due balances. We will not bill a third party without prior agreement among all parties acknowledging and accepting responsibility for payment.

SAMPLE COLLECTION AND SUBMISSION Clients not requesting collection services from Fairway are responsible for proper collection, preservation, packaging, and delivery of samples to the laboratory in accordance with current law and commercial practice. Fairway shall have no responsibility for sample integrity prior to the receipt of the sample(s) and/or for any inaccuracy in test or analyses results as a result of the failure of the client or any third party to maintain the integrity of samples prior to delivery to Fairway. All samples submitted must be accompanied by a completed chain of custody or similar document clearly noting the requested analyses, dates/time sampled, client contact information, and trail of custody.

SUBCONTRACTING Some analyses may require subcontracting to another laboratory. Unless the client indicates otherwise, this decision will be made by Fairway. Subcontracted work will be identified on the final report in accordance with NELAC requirements.

RETURN OF RESULTS Fairway routinely provides faxed or verbal results within 10 working days of receipt of sample(s) and a hard copy of the data results is routinely received via US Postal Service within 15 working days. At the request of the client, Fairway may offer expedited return of sample results. Surcharges may apply to rush requests. All rush requests must be pre-approved by Fairway. We reserve the right to charge an archive retrieval fee for results older than one (1) year from the date of the request. All records will be maintained by Fairway for 5 years, after which, they will be destroyed.

SAMPLE DISPOSAL Fairway will maintain samples for four (4) weeks after the sample receipt date. Fairway will dispose of samples which are not and/or do not contain hazardous wastes (as such term is defined by applicable federal or state law), unless prior arrangements have been made for long-term storage. Fairway reserves the right to charge a disposal fee for the proper disposal of samples found or suspected to contain hazardous waste. A return shipping charge will be invoiced for samples returned to the client at their request.

HAZARD COMMUNICATION The client has the responsibility to inform the laboratory of any hazardous characteristics known or suspected about the sample, and to provide information on hazard prevention and personal protection as necessary or otherwise required by applicable law.

WARRANTY AND LIMITATION OF LIABILITY For services rendered, Fairway warrants that it will apply its best scientific knowledge and judgment and to employ its best level of effort consistent with professional standards within the environmental testing industry in performing the analytical services requested by its clients. We disclaim any other warranties, expressed or implied by law. Fairway does not accept any legal responsibility for the purposes for which client uses the test results.

LITIGATION All costs associated with compliance to any subpoena for documents, for testimony in a court of law, or for any other purpose relating to work performed by Fairway Laboratories, Inc. shall be invoiced by Fairway and paid by client. These costs shall include, but are not limited to, hourly charges for the persons involved, travel, mileage, and accommodations and for any and all other expenses associated with said litigation.

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1072

SAMPLING, CHAIN OF CUSTODY AND ANALYSES RECORD FOR SOIL, GROUNDWATER AND AIR MONITORING **PA**

SAMPLING PLACE Dunbar Amoco
OWNER
ADDRESS Rt 119
Dunbar PA
PROJECT NAME Dunbar Amoco

CC FIELD REP. M Kauffman
DATE 9/20/16
WEATHER Sunny
PROJECT NO.
ATTENTION M Kauffman

FIRM RESPONSIBLE FOR SAMPLING
Converse Consultants
2738 West College Avenue
State College, Pennsylvania 16801
814-234-3223
Fax 814-234-3255

GI23109#1

STATION NO. OR SAMPLE IDENT.	TIME	DEPTH TO WATER (FEET) DATUM	PURGING METHOD / SAMPLE DEPTH (FT.) INTERVAL	AMOUNT PURGED (GALS)	SAMPLING METHOD	CONTAINER DESCRIPTION: 2 40ml vials	pH	SPECIFIC CONDUCTANCE (μ mohs/cm.)	TEMP. °C	ANALYSIS REQUEST / COMMENTS
MW23S	1130	20.13	bailer		bailer	X				
MW24S	1220	14.91				X				
MW25S	1200	13.05				X				
MW26S	1320	15.64				X				
MW27S	1350	21.75				X				
DUP01	1135	2				X				
pond	1240					X				

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
M Kauffman	9/23/16	13:35	PM
PM	9/23/16	15:40	
			9-23-16 15:40

RECEIVING LABORATORY
ADDRESS
DATE RECEIVED TIME
ALL SAMPLES REC'D. INTACT ☐ YES ☐ NO
LIST SAMPLES MISSING/DAMAGED
ACCEPTED BY

1/92

DISTRIBUTION: *WHITE*—WITH SHIPMENT TO LAB. *CANARY*—CONVERSE. *PINK*—RETAINED BY FIELD REP.

SOP FLI0601-002 Revision 21 Date: December 4, 2015 Page of

Chain of Custody Receiving Document

Page 2 of 2

Receiver: CL

Date/Time of this check: 92316 1605 Client: Cnvirse Lab # 6123109 #2

Received on ICE? Y ☐ * **Sample Temperature when delivered to the Lab:** 3.0 **Acceptable?** Y ☐ * **or In cool down process?** ☐ *
(Not applicable for WV compliance)

Custody Seals? Y Intact? Y

COC/Labels on bottles agree? Y ☐* Correct containers for all the analysis requested? Y ☐ * Matrix: Wtr

COC #	Number and Type of BOTTLES										Comments
	Poly Non-Pres.	Poly H2SO4	Poly HNO3	Amber H2SO4	Amber Non-Pres.	Poly NaOH	VOCS (Head space?) Y	Other ☐ *	Properly Preserved ☐ *	Bacti	
MW235							2 HCl				
245											
255											
265											
275											
Dup											
Blnk											
TB							1 HCl				

* DEVIATION PRESENT:		CLIENT CALLED:	CLIENT RESPONSE:	
⊗ No Ice	( )	YES ( ) EMAIL	Proceed with analysis; qualify data	( )
⊗ Not at Proper Temperature	( )	By Whom: MISTY	Will Resample	( )
⊗ Wrong Container	( )	CINDY Date: 9/26/16	Provided Information	( )
⊗ Missing Information:	X		No Response; Proceed and qualified	X
			Client Contact: _____ Date: 9/28	

* Comments: NO ANALYSIS REQUESTED

This is a date sensitive document and may not be current after September 22, 2016.

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Converse		Project:	DUNBAR AMOCO	
2738 West College Avenue		Project Number:	[none]	**Reported:**
State College PA, 16801		Collector:	CLIENT	07/21/16 09:43
Project Manager:	Misty Kauffman	Number of Containers:	42	

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Sample Type	Date Sampled	Date Received
MW-10	6G01054-01	Water	Grab	06/30/16 10:43	07/01/16 13:45
MW-10S	6G01054-02	Water	Grab	06/30/16 10:50	07/01/16 13:45
MW-8	6G01054-03	Water	Grab	06/30/16 11:40	07/01/16 13:45
MW-12	6G01054-04	Water	Grab	06/30/16 12:30	07/01/16 13:45
MW-12S	6G01054-05	Water	Grab	06/30/16 13:05	07/01/16 13:45
MW-15S	6G01054-06	Water	Grab	06/30/16 14:15	07/01/16 13:45
MW-16	6G01054-07	Water	Grab	06/30/16 14:45	07/01/16 13:45
MW-26S	6G01054-08	Water	Grab	06/30/16 15:35	07/01/16 13:45
DUP-01	6G01054-09	Water	Grab	06/30/16 12:35	07/01/16 13:45
MW-7	6G01054-10	Water	Grab	06/30/16 10:15	07/01/16 13:45
MW-3	6G01054-11	Water	Grab	06/30/16 10:49	07/01/16 13:45
MW-6	6G01054-12	Water	Grab	06/30/16 11:40	07/01/16 13:45
MW-27	6G01054-13	Water	Grab	06/30/16 12:05	07/01/16 13:45
MW-18	6G01054-14	Water	Grab	06/30/16 12:33	07/01/16 13:45
MW-22	6G01054-15	Water	Grab	06/30/16 12:59	07/01/16 13:45
MW-20	6G01054-16	Water	Grab	06/30/16 13:51	07/01/16 13:45
MW-25	6G01054-17	Water	Grab	06/30/16 14:25	07/01/16 13:45
POND	6G01054-18	Water	Grab	06/30/16 14:50	07/01/16 13:45

Fairway Laboratories, Inc.

Reviewed and Submitted by:

Michael P. Tyler
Laboratory Director

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State Certifications: MD 275, WV 364

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Converse		Project:	DUNBAR AMOCO	
2738 West College Avenue		Project Number:	[none]	**Reported:**
State College PA, 16801		Collector:	CLIENT	07/21/16 09:43
Project Manager:	Misty Kauffman	Number of Containers:	42	

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Sample Type	Date Sampled	Date Received
MW-19	6G01054-19	Water	Grab	06/30/16 15:27	07/01/16 13:45
MW-24	6G01054-20	Water	Grab	06/30/16 15:52	07/01/16 13:45
MW-23	6G01054-21	Water	Grab	06/30/16 16:51	07/01/16 13:45
TB	6G01054-22	Water	Trip Blank	06/30/16 00:00	07/01/16 13:45

Refer to receiving document. CB

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	[none]	**Reported:**
State College PA, 16801	Collector:	CLIENT	07/21/16 09:43
Project Manager: Misty Kauffman	Number of Containers:	42	

Client Sample ID: **MW-10** **Date/Time Sampled:** 06/30/16 10:43

Laboratory Sample ID: **6G01054-01 (Water/Grab)**

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	* Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
Benzene	1.03		1.00	ug/l	07/09/16 07:17	EPA 8260B	mtc	
Toluene	1.59		1.00	ug/l	07/09/16 07:17	EPA 8260B	mtc	
Ethylbenzene	<1.00		1.00	ug/l	07/09/16 07:17	EPA 8260B	mtc	
Xylenes (total)	<2.00		2.00	ug/l	07/09/16 07:17	EPA 8260B	mtc	
Isopropylbenzene	<1.00		1.00	ug/l	07/09/16 07:17	EPA 8260B	mtc	
Methyl tert-butyl ether	9.42		1.00	ug/l	07/09/16 07:17	EPA 8260B	mtc	
Naphthalene	<1.00		1.00	ug/l	07/09/16 07:17	EPA 8260B	mtc	
Surrogate: 4-Bromofluorobenzene		*99.1 %*	*70-130*		*07/09/16 07:17*	*EPA 8260B*	mtc	
Surrogate: 1,2-Dichloroethane-d4		*109 %*	*70-130*		*07/09/16 07:17*	*EPA 8260B*	mtc	
Surrogate: Fluorobenzene		*110 %*	*70-130*		*07/09/16 07:17*	*EPA 8260B*	mtc	

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	[none]	**Reported:**
State College PA, 16801	Collector:	CLIENT	07/21/16 09:43
Project Manager: Misty Kauffman	Number of Containers:	42	

Client Sample ID: **MW-10S** **Date/Time Sampled:** 06/30/16 10:50

Laboratory Sample ID: **6G01054-02 (Water/Grab)**

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	* Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
Benzene	142		10.0	ug/l	07/07/16 23:04	EPA 8260B	mtc	
Toluene	11.5		10.0	ug/l	07/07/16 23:04	EPA 8260B	mtc	
Ethylbenzene	252		10.0	ug/l	07/07/16 23:04	EPA 8260B	mtc	
Xylenes (total)	20.5		20.0	ug/l	07/07/16 23:04	EPA 8260B	mtc	
Isopropylbenzene	41.5		10.0	ug/l	07/07/16 23:04	EPA 8260B	mtc	
Methyl tert-butyl ether	15.1		10.0	ug/l	07/07/16 23:04	EPA 8260B	mtc	
Naphthalene	68.0		10.0	ug/l	07/07/16 23:04	EPA 8260B	mtc	
Surrogate: 4-Bromofluorobenzene		*99.4 %*	*70-130*		*07/07/16 23:04*	*EPA 8260B*	mtc	
Surrogate: 1,2-Dichloroethane-d4		*109 %*	*70-130*		*07/07/16 23:04*	*EPA 8260B*	mtc	
Surrogate: Fluorobenzene		*110 %*	*70-130*		*07/07/16 23:04*	*EPA 8260B*	mtc	

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	[none]	**Reported:**
State College PA, 16801	Collector:	CLIENT	07/21/16 09:43
Project Manager: Misty Kauffman	Number of Containers:	42	

Client Sample ID: MW-8 **Date/Time Sampled:** 06/30/16 11:40

Laboratory Sample ID: 6G01054-03 (Water/Grab)

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	* Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
Benzene	<1.00		1.00	ug/l	07/07/16 10:57	EPA 8260B	mtc	
Toluene	<1.00		1.00	ug/l	07/07/16 10:57	EPA 8260B	mtc	
Ethylbenzene	<1.00		1.00	ug/l	07/07/16 10:57	EPA 8260B	mtc	
Xylenes (total)	<2.00		2.00	ug/l	07/07/16 10:57	EPA 8260B	mtc	
Isopropylbenzene	<1.00		1.00	ug/l	07/07/16 10:57	EPA 8260B	mtc	
Methyl tert-butyl ether	<1.00		1.00	ug/l	07/07/16 10:57	EPA 8260B	mtc	
Naphthalene	<1.00		1.00	ug/l	07/07/16 10:57	EPA 8260B	mtc	
Surrogate: 4-Bromofluorobenzene		*101 %*	*70-130*		*07/07/16 10:57*	*EPA 8260B*	mtc	
Surrogate: 1,2-Dichloroethane-d4		*105 %*	*70-130*		*07/07/16 10:57*	*EPA 8260B*	mtc	
Surrogate: Fluorobenzene		*108 %*	*70-130*		*07/07/16 10:57*	*EPA 8260B*	mtc	

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	[none]	**Reported:**
State College PA, 16801	Collector:	CLIENT	07/21/16 09:43
Project Manager: Misty Kauffman	Number of Containers:	42	

Client Sample ID: **MW-12** **Date/Time Sampled:** 06/30/16 12:30

Laboratory Sample ID: **6G01054-04 (Water/Grab)**

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	* Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								2j
Benzene	137		25.0	ug/l	07/08/16 17:20	EPA 8260B	mtc	
Toluene	<25.0		25.0	ug/l	07/08/16 17:20	EPA 8260B	mtc	
Ethylbenzene	<25.0		25.0	ug/l	07/08/16 17:20	EPA 8260B	mtc	
Xylenes (total)	<50.0		50.0	ug/l	07/08/16 17:20	EPA 8260B	mtc	
Isopropylbenzene	<25.0		25.0	ug/l	07/08/16 17:20	EPA 8260B	mtc	
Methyl tert-butyl ether	159		25.0	ug/l	07/08/16 17:20	EPA 8260B	mtc	
Naphthalene	<25.0		25.0	ug/l	07/08/16 17:20	EPA 8260B	mtc	
Surrogate: 4-Bromofluorobenzene		*98.9 %*	*70-130*		*07/08/16 17:20*	*EPA 8260B*	mtc	
Surrogate: 1,2-Dichloroethane-d4		*106 %*	*70-130*		*07/08/16 17:20*	*EPA 8260B*	mtc	
Surrogate: Fluorobenzene		*110 %*	*70-130*		*07/08/16 17:20*	*EPA 8260B*	mtc	

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	[none]	**Reported:**
State College PA, 16801	Collector:	CLIENT	07/21/16 09:43
Project Manager: Misty Kauffman	Number of Containers:	42	

Client Sample ID: **MW-12S** **Date/Time Sampled:** 06/30/16 13:05

Laboratory Sample ID: **6G01054-05 (Water/Grab)**

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	* Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								AA
Benzene	972		25.0	ug/l	07/08/16 18:35	EPA 8260B	mtc	
Toluene	48.0		25.0	ug/l	07/08/16 18:35	EPA 8260B	mtc	
Ethylbenzene	346		25.0	ug/l	07/08/16 18:35	EPA 8260B	mtc	
Xylenes (total)	79.8		50.0	ug/l	07/08/16 18:35	EPA 8260B	mtc	
Isopropylbenzene	69.0		25.0	ug/l	07/08/16 18:35	EPA 8260B	mtc	
Methyl tert-butyl ether	121		25.0	ug/l	07/08/16 18:35	EPA 8260B	mtc	
Naphthalene	<25.0		25.0	ug/l	07/08/16 18:35	EPA 8260B	mtc	
Surrogate: 4-Bromofluorobenzene		*99.1 %*	*70-130*		*07/08/16 18:35*	*EPA 8260B*	mtc	
Surrogate: 1,2-Dichloroethane-d4		*105 %*	*70-130*		*07/08/16 18:35*	*EPA 8260B*	mtc	
Surrogate: Fluorobenzene		*107 %*	*70-130*		*07/08/16 18:35*	*EPA 8260B*	mtc	

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	[none]	**Reported:**
State College PA, 16801	Collector:	CLIENT	07/21/16 09:43
Project Manager: Misty Kauffman	Number of Containers:	42	

Client Sample ID: **MW-15S** **Date/Time Sampled:** 06/30/16 14:15

Laboratory Sample ID: **6G01054-06 (Water/Grab)**

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	* Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
Benzene	236		10.0	ug/l	07/08/16 15:26	EPA 8260B	mtc	
Toluene	40.0		1.00	ug/l	07/07/16 11:35	EPA 8260B	mtc	
Ethylbenzene	95.3		1.00	ug/l	07/07/16 11:35	EPA 8260B	mtc	
Xylenes (total)	232		2.00	ug/l	07/07/16 11:35	EPA 8260B	mtc	
Isopropylbenzene	21.9		1.00	ug/l	07/07/16 11:35	EPA 8260B	mtc	
Methyl tert-butyl ether	113		1.00	ug/l	07/07/16 11:35	EPA 8260B	mtc	
Naphthalene	66.7		1.00	ug/l	07/07/16 11:35	EPA 8260B	mtc	
Surrogate: 4-Bromofluorobenzene		*99.3 %*	*70-130*		*07/07/16 11:35*	*EPA 8260B*	mtc	
Surrogate: 1,2-Dichloroethane-d4		*105 %*	*70-130*		*07/07/16 11:35*	*EPA 8260B*	mtc	
Surrogate: Fluorobenzene		*106 %*	*70-130*		*07/07/16 11:35*	*EPA 8260B*	mtc	

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	[none]	**Reported:**
State College PA, 16801	Collector:	CLIENT	07/21/16 09:43
Project Manager: Misty Kauffman	Number of Containers:	42	

Client Sample ID: MW-16 **Date/Time Sampled:** 06/30/16 14:45

Laboratory Sample ID: 6G01054-07 (Water/Grab)

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	* Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
Benzene	<1.00		1.00	ug/l	07/07/16 12:12	EPA 8260B	mtc	
Toluene	<1.00		1.00	ug/l	07/07/16 12:12	EPA 8260B	mtc	
Ethylbenzene	<1.00		1.00	ug/l	07/07/16 12:12	EPA 8260B	mtc	
Xylenes (total)	<2.00		2.00	ug/l	07/07/16 12:12	EPA 8260B	mtc	
Isopropylbenzene	<1.00		1.00	ug/l	07/07/16 12:12	EPA 8260B	mtc	
Methyl tert-butyl ether	<1.00		1.00	ug/l	07/07/16 12:12	EPA 8260B	mtc	
Naphthalene	<1.00		1.00	ug/l	07/07/16 12:12	EPA 8260B	mtc	
Surrogate: 4-Bromofluorobenzene		*100 %*	*70-130*		*07/07/16 12:12*	*EPA 8260B*	mtc	
Surrogate: 1,2-Dichloroethane-d4		*105 %*	*70-130*		*07/07/16 12:12*	*EPA 8260B*	mtc	
Surrogate: Fluorobenzene		*109 %*	*70-130*		*07/07/16 12:12*	*EPA 8260B*	mtc	

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	[none]	**Reported:**
State College PA, 16801	Collector:	CLIENT	07/21/16 09:43
Project Manager: Misty Kauffman	Number of Containers:	42	

Client Sample ID: **MW-26S** **Date/Time Sampled:** 06/30/16 15:35

Laboratory Sample ID: **6G01054-08 (Water/Grab)**

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	* Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
Benzene	6.00		5.00	ug/l	07/07/16 22:07	EPA 8260B	mtc	
Toluene	<5.00		5.00	ug/l	07/07/16 22:07	EPA 8260B	mtc	
Ethylbenzene	<5.00		5.00	ug/l	07/07/16 22:07	EPA 8260B	mtc	
Xylenes (total)	<10.0		10.0	ug/l	07/07/16 22:07	EPA 8260B	mtc	
Isopropylbenzene	<5.00		5.00	ug/l	07/07/16 22:07	EPA 8260B	mtc	
Methyl tert-butyl ether	7.30		5.00	ug/l	07/07/16 22:07	EPA 8260B	mtc	
Naphthalene	<5.00		5.00	ug/l	07/07/16 22:07	EPA 8260B	mtc	
Surrogate: 4-Bromofluorobenzene		*99.2 %*	*70-130*		*07/07/16 22:07*	*EPA 8260B*	mtc	
Surrogate: 1,2-Dichloroethane-d4		*106 %*	*70-130*		*07/07/16 22:07*	*EPA 8260B*	mtc	
Surrogate: Fluorobenzene		*109 %*	*70-130*		*07/07/16 22:07*	*EPA 8260B*	mtc	

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	[none]	**Reported:**
State College PA, 16801	Collector:	CLIENT	07/21/16 09:43
Project Manager: Misty Kauffman	Number of Containers:	42	

Client Sample ID: **DUP-01** **Date/Time Sampled:** 06/30/16 12:35

Laboratory Sample ID: **6G01054-09 (Water/Grab)**

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	* Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
Benzene	127		5.00	ug/l	07/07/16 21:29	EPA 8260B	mtc	
Toluene	<5.00		5.00	ug/l	07/07/16 21:29	EPA 8260B	mtc	
Ethylbenzene	<5.00		5.00	ug/l	07/07/16 21:29	EPA 8260B	mtc	
Xylenes (total)	<10.0		10.0	ug/l	07/07/16 21:29	EPA 8260B	mtc	
Isopropylbenzene	<5.00		5.00	ug/l	07/07/16 21:29	EPA 8260B	mtc	
Methyl tert-butyl ether	154		5.00	ug/l	07/07/16 21:29	EPA 8260B	mtc	
Naphthalene	<5.00		5.00	ug/l	07/07/16 21:29	EPA 8260B	mtc	
Surrogate: 4-Bromofluorobenzene		*101 %*	*70-130*		*07/07/16 21:29*	*EPA 8260B*	mtc	
Surrogate: 1,2-Dichloroethane-d4		*105 %*	*70-130*		*07/07/16 21:29*	*EPA 8260B*	mtc	
Surrogate: Fluorobenzene		*111 %*	*70-130*		*07/07/16 21:29*	*EPA 8260B*	mtc	

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	[none]	**Reported:**
State College PA, 16801	Collector:	CLIENT	07/21/16 09:43
Project Manager: Misty Kauffman	Number of Containers:	42	

Client Sample ID: MW-7 **Date/Time Sampled:** 06/30/16 10:15

Laboratory Sample ID: 6G01054-10 (Water/Grab)

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	* Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
Benzene	<1.00		1.00	ug/l	07/07/16 12:51	EPA 8260B	mtc	
Toluene	<1.00		1.00	ug/l	07/07/16 12:51	EPA 8260B	mtc	
Ethylbenzene	<1.00		1.00	ug/l	07/07/16 12:51	EPA 8260B	mtc	
Xylenes (total)	<2.00		2.00	ug/l	07/07/16 12:51	EPA 8260B	mtc	
Isopropylbenzene	<1.00		1.00	ug/l	07/07/16 12:51	EPA 8260B	mtc	
Methyl tert-butyl ether	8.96		1.00	ug/l	07/07/16 12:51	EPA 8260B	mtc	
Naphthalene	<1.00		1.00	ug/l	07/07/16 12:51	EPA 8260B	mtc	
Surrogate: 4-Bromofluorobenzene		*99.0 %*	*70-130*		*07/07/16 12:51*	*EPA 8260B*	mtc	
Surrogate: 1,2-Dichloroethane-d4		*105 %*	*70-130*		*07/07/16 12:51*	*EPA 8260B*	mtc	
Surrogate: Fluorobenzene		*110 %*	*70-130*		*07/07/16 12:51*	*EPA 8260B*	mtc	

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	[none]	**Reported:**
State College PA, 16801	Collector:	CLIENT	07/21/16 09:43
Project Manager: Misty Kauffman	Number of Containers:	42	

Client Sample ID: MW-3 **Date/Time Sampled:** 06/30/16 10:49

Laboratory Sample ID: 6G01054-11 (Water/Grab)

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	* Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
Benzene	<1.00		1.00	ug/l	07/07/16 14:06	EPA 8260B	mtc	
Toluene	<1.00		1.00	ug/l	07/07/16 14:06	EPA 8260B	mtc	
Ethylbenzene	<1.00		1.00	ug/l	07/07/16 14:06	EPA 8260B	mtc	
Xylenes (total)	<2.00		2.00	ug/l	07/07/16 14:06	EPA 8260B	mtc	
Isopropylbenzene	<1.00		1.00	ug/l	07/07/16 14:06	EPA 8260B	mtc	
Methyl tert-butyl ether	12.4		1.00	ug/l	07/07/16 14:06	EPA 8260B	mtc	
Naphthalene	<1.00		1.00	ug/l	07/07/16 14:06	EPA 8260B	mtc	
Surrogate: 4-Bromofluorobenzene		*99.6 %*	*70-130*		*07/07/16 14:06*	*EPA 8260B*	mtc	
Surrogate: 1,2-Dichloroethane-d4		*105 %*	*70-130*		*07/07/16 14:06*	*EPA 8260B*	mtc	
Surrogate: Fluorobenzene		*109 %*	*70-130*		*07/07/16 14:06*	*EPA 8260B*	mtc	

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	[none]	**Reported:**
State College PA, 16801	Collector:	CLIENT	07/21/16 09:43
Project Manager: Misty Kauffman	Number of Containers:	42	

Client Sample ID: MW-6 **Date/Time Sampled:** 06/30/16 11:40

Laboratory Sample ID: 6G01054-12 (Water/Grab)

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	* Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
Benzene	<1.00		1.00	ug/l	07/07/16 08:45	EPA 8260B	mtc	
Toluene	<1.00		1.00	ug/l	07/07/16 08:45	EPA 8260B	mtc	
Ethylbenzene	<1.00		1.00	ug/l	07/07/16 08:45	EPA 8260B	mtc	
Xylenes (total)	<2.00		2.00	ug/l	07/07/16 08:45	EPA 8260B	mtc	
Isopropylbenzene	<1.00		1.00	ug/l	07/07/16 08:45	EPA 8260B	mtc	
Methyl tert-butyl ether	<1.00		1.00	ug/l	07/07/16 08:45	EPA 8260B	mtc	
Naphthalene	<1.00		1.00	ug/l	07/07/16 08:45	EPA 8260B	mtc	
Surrogate: 4-Bromofluorobenzene		*98.1 %*	*70-130*		*07/07/16 08:45*	*EPA 8260B*	mtc	
Surrogate: 1,2-Dichloroethane-d4		*108 %*	*70-130*		*07/07/16 08:45*	*EPA 8260B*	mtc	
Surrogate: Fluorobenzene		*110 %*	*70-130*		*07/07/16 08:45*	*EPA 8260B*	mtc	

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	[none]	**Reported:**
State College PA, 16801	Collector:	CLIENT	07/21/16 09:43
Project Manager: Misty Kauffman	Number of Containers:	42	

Client Sample ID: MW-27 **Date/Time Sampled:** 06/30/16 12:05

Laboratory Sample ID: 6G01054-13 (Water/Grab)

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	* Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
Benzene	<1.00		1.00	ug/l	07/07/16 09:26	EPA 8260B	mtc	2e
Toluene	<1.00		1.00	ug/l	07/07/16 09:26	EPA 8260B	mtc	
Ethylbenzene	<1.00		1.00	ug/l	07/07/16 09:26	EPA 8260B	mtc	
Xylenes (total)	<2.00		2.00	ug/l	07/07/16 09:26	EPA 8260B	mtc	
Isopropylbenzene	<1.00		1.00	ug/l	07/07/16 09:26	EPA 8260B	mtc	
Methyl tert-butyl ether	27.8		1.00	ug/l	07/07/16 09:26	EPA 8260B	mtc	
Naphthalene	<1.00		1.00	ug/l	07/07/16 09:26	EPA 8260B	mtc	
Surrogate: 4-Bromofluorobenzene		*99.2 %*	*70-130*		*07/07/16 09:26*	*EPA 8260B*	mtc	
Surrogate: 1,2-Dichloroethane-d4		*113 %*	*70-130*		*07/07/16 09:26*	*EPA 8260B*	mtc	
Surrogate: Fluorobenzene		*110 %*	*70-130*		*07/07/16 09:26*	*EPA 8260B*	mtc	

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	[none]	**Reported:**
State College PA, 16801	Collector:	CLIENT	07/21/16 09:43
Project Manager: Misty Kauffman	Number of Containers:	42	

Client Sample ID: **MW-18** **Date/Time Sampled:** 06/30/16 12:33

Laboratory Sample ID: **6G01054-14 (Water/Grab)**

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	* Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
Benzene	231		5.00	ug/l	07/09/16 03:29	EPA 8260B	mtc	
Toluene	41.8		5.00	ug/l	07/09/16 03:29	EPA 8260B	mtc	
Ethylbenzene	547		5.00	ug/l	07/09/16 03:29	EPA 8260B	mtc	
Xylenes (total)	650		10.0	ug/l	07/09/16 03:29	EPA 8260B	mtc	
Isopropylbenzene	80.8		5.00	ug/l	07/09/16 03:29	EPA 8260B	mtc	
Methyl tert-butyl ether	60.2		5.00	ug/l	07/09/16 03:29	EPA 8260B	mtc	2e
Naphthalene	177		5.00	ug/l	07/09/16 03:29	EPA 8260B	mtc	
Surrogate: 4-Bromofluorobenzene		*99.6 %*	*70-130*		*07/09/16 03:29*	*EPA 8260B*	mtc	
Surrogate: 1,2-Dichloroethane-d4		*106 %*	*70-130*		*07/09/16 03:29*	*EPA 8260B*	mtc	
Surrogate: Fluorobenzene		*110 %*	*70-130*		*07/09/16 03:29*	*EPA 8260B*	mtc	

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	[none]	**Reported:**
State College PA, 16801	Collector:	CLIENT	07/21/16 09:43
Project Manager: Misty Kauffman	Number of Containers:	42	

Client Sample ID: **MW-22** **Date/Time Sampled:** 06/30/16 12:59

Laboratory Sample ID: **6G01054-15 (Water/Grab)**

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	* Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
Benzene	110		10.0	ug/l	07/08/16 19:51	EPA 8260B	mtc	
Toluene	14.5		10.0	ug/l	07/08/16 19:51	EPA 8260B	mtc	
Ethylbenzene	118		10.0	ug/l	07/08/16 19:51	EPA 8260B	mtc	
Xylenes (total)	117		20.0	ug/l	07/08/16 19:51	EPA 8260B	mtc	
Isopropylbenzene	37.9		10.0	ug/l	07/08/16 19:51	EPA 8260B	mtc	
Methyl tert-butyl ether	30.5		10.0	ug/l	07/08/16 19:51	EPA 8260B	mtc	
Naphthalene	47.0		10.0	ug/l	07/08/16 19:51	EPA 8260B	mtc	
Surrogate: 4-Bromofluorobenzene		*99.2 %*	*70-130*		*07/08/16 19:51*	*EPA 8260B*	mtc	
Surrogate: 1,2-Dichloroethane-d4		*107 %*	*70-130*		*07/08/16 19:51*	*EPA 8260B*	mtc	
Surrogate: Fluorobenzene		*110 %*	*70-130*		*07/08/16 19:51*	*EPA 8260B*	mtc	

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PaDEP: PA 41-04684

State Certifications: MD 275, WV 364

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	[none]	**Reported:**
State College PA, 16801	Collector:	CLIENT	07/21/16 09:43
Project Manager: Misty Kauffman	Number of Containers:	42	

Client Sample ID: **MW-20** **Date/Time Sampled:** 06/30/16 13:51

Laboratory Sample ID: **6G01054-16 (Water/Grab)**

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	* Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
Benzene	65.4		1.00	ug/l	07/07/16 10:03	EPA 8260B	mtc	2e
Toluene	<1.00		1.00	ug/l	07/07/16 10:03	EPA 8260B	mtc	
Ethylbenzene	<1.00		1.00	ug/l	07/07/16 10:03	EPA 8260B	mtc	
Xylenes (total)	<2.00		2.00	ug/l	07/07/16 10:03	EPA 8260B	mtc	
Isopropylbenzene	1.38		1.00	ug/l	07/07/16 10:03	EPA 8260B	mtc	
Methyl tert-butyl ether	119		5.00	ug/l	07/08/16 17:01	EPA 8260B	mtc	
Naphthalene	<1.00		1.00	ug/l	07/07/16 10:03	EPA 8260B	mtc	
Surrogate: 4-Bromofluorobenzene		*101 %*	*70-130*		*07/07/16 10:03*	*EPA 8260B*	mtc	
Surrogate: 1,2-Dichloroethane-d4		*112 %*	*70-130*		*07/07/16 10:03*	*EPA 8260B*	mtc	
Surrogate: Fluorobenzene		*113 %*	*70-130*		*07/07/16 10:03*	*EPA 8260B*	mtc	

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	[none]	**Reported:**
State College PA, 16801	Collector:	CLIENT	07/21/16 09:43
Project Manager: Misty Kauffman	Number of Containers:	42	

Client Sample ID: **MW-25** **Date/Time Sampled:** 06/30/16 14:25

Laboratory Sample ID: **6G01054-17 (Water/Grab)**

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	* Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
Benzene	<1.00		1.00	ug/l	07/07/16 10:41	EPA 8260B	mtc	2e
Toluene	<1.00		1.00	ug/l	07/07/16 10:41	EPA 8260B	mtc	
Ethylbenzene	<1.00		1.00	ug/l	07/07/16 10:41	EPA 8260B	mtc	
Xylenes (total)	<2.00		2.00	ug/l	07/07/16 10:41	EPA 8260B	mtc	
Isopropylbenzene	<1.00		1.00	ug/l	07/07/16 10:41	EPA 8260B	mtc	
Methyl tert-butyl ether	17.5		1.00	ug/l	07/07/16 10:41	EPA 8260B	mtc	
Naphthalene	<1.00		1.00	ug/l	07/07/16 10:41	EPA 8260B	mtc	
Surrogate: 4-Bromofluorobenzene		*99.3 %*	*70-130*		*07/07/16 10:41*	*EPA 8260B*	mtc	
Surrogate: 1,2-Dichloroethane-d4		*110 %*	*70-130*		*07/07/16 10:41*	*EPA 8260B*	mtc	
Surrogate: Fluorobenzene		*107 %*	*70-130*		*07/07/16 10:41*	*EPA 8260B*	mtc	

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	[none]	**Reported:**
State College PA, 16801	Collector:	CLIENT	07/21/16 09:43
Project Manager: Misty Kauffman	Number of Containers:	42	

Client Sample ID: **POND** **Date/Time Sampled:** 06/30/16 14:50

Laboratory Sample ID: **6G01054-18 (Water/Grab)**

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	* Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
Benzene	<1.00		1.00	ug/l	07/08/16 00:40	EPA 8260B	mtc	
Toluene	<1.00		1.00	ug/l	07/08/16 00:40	EPA 8260B	mtc	
Ethylbenzene	<1.00		1.00	ug/l	07/08/16 00:40	EPA 8260B	mtc	
Xylenes (total)	<2.00		2.00	ug/l	07/08/16 00:40	EPA 8260B	mtc	
Isopropylbenzene	<1.00		1.00	ug/l	07/08/16 00:40	EPA 8260B	mtc	
Methyl tert-butyl ether	<1.00		1.00	ug/l	07/08/16 00:40	EPA 8260B	mtc	
Naphthalene	<1.00		1.00	ug/l	07/08/16 00:40	EPA 8260B	mtc	
Surrogate: 4-Bromofluorobenzene		*99.7 %*	*70-130*		*07/08/16 00:40*	*EPA 8260B*	mtc	
Surrogate: 1,2-Dichloroethane-d4		*105 %*	*70-130*		*07/08/16 00:40*	*EPA 8260B*	mtc	
Surrogate: Fluorobenzene		*108 %*	*70-130*		*07/08/16 00:40*	*EPA 8260B*	mtc	

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	[none]	**Reported:**
State College PA, 16801	Collector:	CLIENT	07/21/16 09:43
Project Manager: Misty Kauffman	Number of Containers:	42	

Client Sample ID: **MW-19** **Date/Time Sampled:** 06/30/16 15:27

Laboratory Sample ID: **6G01054-19 (Water/Grab)**

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	* Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
Benzene	39.4		1.00	ug/l	07/08/16 18:16	EPA 8260B	mtc	
Toluene	<1.00		1.00	ug/l	07/08/16 18:16	EPA 8260B	mtc	
Ethylbenzene	<1.00		1.00	ug/l	07/08/16 18:16	EPA 8260B	mtc	
Xylenes (total)	<2.00		2.00	ug/l	07/08/16 18:16	EPA 8260B	mtc	
Isopropylbenzene	<1.00		1.00	ug/l	07/08/16 18:16	EPA 8260B	mtc	
Methyl tert-butyl ether	64.3		1.00	ug/l	07/08/16 18:16	EPA 8260B	mtc	
Naphthalene	<1.00		1.00	ug/l	07/08/16 18:16	EPA 8260B	mtc	
Surrogate: 4-Bromofluorobenzene		*100 %*	*70-130*		*07/08/16 18:16*	*EPA 8260B*	mtc	
Surrogate: 1,2-Dichloroethane-d4		*109 %*	*70-130*		*07/08/16 18:16*	*EPA 8260B*	mtc	
Surrogate: Fluorobenzene		*112 %*	*70-130*		*07/08/16 18:16*	*EPA 8260B*	mtc	

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	[none]	**Reported:**
State College PA, 16801	Collector:	CLIENT	07/21/16 09:43
Project Manager: Misty Kauffman	Number of Containers:	42	

Client Sample ID: MW-24 **Date/Time Sampled:** 06/30/16 15:52

Laboratory Sample ID: 6G01054-20 (Water/Grab)

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	* Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
Benzene	<1.00		1.00	ug/l	07/07/16 12:34	EPA 8260B	mtc	2e
Toluene	<1.00		1.00	ug/l	07/07/16 12:34	EPA 8260B	mtc	
Ethylbenzene	<1.00		1.00	ug/l	07/07/16 12:34	EPA 8260B	mtc	
Xylenes (total)	<2.00		2.00	ug/l	07/07/16 12:34	EPA 8260B	mtc	
Isopropylbenzene	<1.00		1.00	ug/l	07/07/16 12:34	EPA 8260B	mtc	
Methyl tert-butyl ether	25.9		1.00	ug/l	07/07/16 12:34	EPA 8260B	mtc	
Naphthalene	<1.00		1.00	ug/l	07/07/16 12:34	EPA 8260B	mtc	
Surrogate: 4-Bromofluorobenzene		*100 %*	*70-130*		*07/07/16 12:34*	*EPA 8260B*	mtc	
Surrogate: 1,2-Dichloroethane-d4		*111 %*	*70-130*		*07/07/16 12:34*	*EPA 8260B*	mtc	
Surrogate: Fluorobenzene		*109 %*	*70-130*		*07/07/16 12:34*	*EPA 8260B*	mtc	

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	[none]	**Reported:**
State College PA, 16801	Collector:	CLIENT	07/21/16 09:43
Project Manager: Misty Kauffman	Number of Containers:	42	

Client Sample ID: MW-23 **Date/Time Sampled:** 06/30/16 16:51

Laboratory Sample ID: 6G01054-21 (Water/Grab)

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	* Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
Benzene	<1.00		1.00	ug/l	07/07/16 13:12	EPA 8260B	mtc	2e
Toluene	<1.00		1.00	ug/l	07/07/16 13:12	EPA 8260B	mtc	
Ethylbenzene	<1.00		1.00	ug/l	07/07/16 13:12	EPA 8260B	mtc	
Xylenes (total)	<2.00		2.00	ug/l	07/07/16 13:12	EPA 8260B	mtc	
Isopropylbenzene	<1.00		1.00	ug/l	07/07/16 13:12	EPA 8260B	mtc	
Methyl tert-butyl ether	<1.00		1.00	ug/l	07/07/16 13:12	EPA 8260B	mtc	
Naphthalene	<1.00		1.00	ug/l	07/07/16 13:12	EPA 8260B	mtc	
Surrogate: 4-Bromofluorobenzene		*99.8 %*	*70-130*		*07/07/16 13:12*	*EPA 8260B*	mtc	
Surrogate: 1,2-Dichloroethane-d4		*111 %*	*70-130*		*07/07/16 13:12*	*EPA 8260B*	mtc	
Surrogate: Fluorobenzene		*110 %*	*70-130*		*07/07/16 13:12*	*EPA 8260B*	mtc	

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	[none]	**Reported:**
State College PA, 16801	Collector:	CLIENT	07/21/16 09:43
Project Manager: Misty Kauffman	Number of Containers:	42	

Client Sample ID: TB **Date/Time Sampled:** 06/30/16 00:00

Laboratory Sample ID: 6G01054-22 (Water/Trip Blank)

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Method	* Analyst	Note
Volatile Organic Compounds by EPA Method 8260B								
Benzene	<1.00		1.00	ug/l	07/09/16 05:24	EPA 8260B	mtc	
Toluene	<1.00		1.00	ug/l	07/09/16 05:24	EPA 8260B	mtc	
Ethylbenzene	<1.00		1.00	ug/l	07/09/16 05:24	EPA 8260B	mtc	
Xylenes (total)	<2.00		2.00	ug/l	07/09/16 05:24	EPA 8260B	mtc	
Isopropylbenzene	<1.00		1.00	ug/l	07/09/16 05:24	EPA 8260B	mtc	
Methyl tert-butyl ether	<1.00		1.00	ug/l	07/09/16 05:24	EPA 8260B	mtc	2e
Naphthalene	<1.00		1.00	ug/l	07/09/16 05:24	EPA 8260B	mtc	
Surrogate: 4-Bromofluorobenzene		*99.6 %*	*70-130*		*07/09/16 05:24*	*EPA 8260B*	mtc	
Surrogate: 1,2-Dichloroethane-d4		*104 %*	*70-130*		*07/09/16 05:24*	*EPA 8260B*	mtc	
Surrogate: Fluorobenzene		*109 %*	*70-130*		*07/09/16 05:24*	*EPA 8260B*	mtc	

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	[none]	**Reported:**
State College PA, 16801	Collector:	CLIENT	07/21/16 09:43
Project Manager: Misty Kauffman	Number of Containers:	42	

Notes

2e	CCV was outside the QC range for the noted analyte. Data accepted based on additional batch QC.
2j	Sample was analyzed at a dilution due to the matrix.
AA	Sample was analyzed at a dilution due to free product.

Definitions

If surrogate values are not within the indicated range, then the results are considered to be estimated.

Reporting limits are adjusted accordingly when samples are analyzed at a dilution due to the matrix.

The following analyses are to be performed immediately upon sampling: pH, sulfite, chlorine residual, dissolved oxygen, filtration for ortho phosphorus, and ferrous iron. The date and time reported reflect the time the samples were analyzed at the laboratory.

MBAS, calculated as LAS, mol wt 348

If the solid sample weight for VOC analysis does not fall within the 3.5-6.5 gram range, the results are considered estimated values.

Unless otherwise noted, all results for solids are reported on a dry weight basis.

Samples collected by Fairway Laboratories' personnel are done so in accordance with Standard Operating Procedures established by Fairway Laboratories.

*	P indicates analysis performed by Fairway Laboratories, Inc. at the Pennsdale location. This location is PaDEP Chapter 252 certified.
<	Represents "less than" - indicates that the result was less than the reporting limit.
MDL	Method Detection Limit - is the lowest or minimum level that provides 99% confidence level that the analyte is detected. Any reported result values that are less than the RL are considered estimated values.
RL	Reporting Limit - is the lowest or minimum level at which the analyte can be quantified.
[CALC]	Indicates a calculated result. Calculations use results from other analyses performed under accredited methods.

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Converse	Project:	DUNBAR AMOCO	
2738 West College Avenue	Project Number:	[none]	**Reported:**
State College PA, 16801	Collector:	CLIENT	07/21/16 09:43
Project Manager: Misty Kauffman	Number of Containers:	42	

Terms & Conditions

Services provided by Fairway Laboratories Inc. are limited to the terms and conditions stated herein, unless otherwise agreed to in a formal contract.

CHAIN OF CUSTODY Fairway Laboratories Inc. ("Fairway," "us" or "we") will initiate a chain-of-custody/request for analysis upon sample receipt unless the client includes a completed form with the received sample(s). Upon request, Fairway will provide chain-of-custody forms for use.

CONFIDENTIALITY Fairway maintains confidentiality in all of our client interactions. The client's consent will be required before releasing information about the services provided.

CONTRACTS All contracts are subject to review and approval by Fairway's legal council. Each contract must be signed by a corporate officer.

PAYMENT/BILLING Unless otherwise set forth in a signed contract or purchase order, terms of payment are "NET 30 Days." The time allowed for payment shall begin based on the invoice date. A 1.5% per month service charge may be added to all unpaid balances beyond the initial 30 days. In its sole discretion, Fairway reserves the right to request payment before services and hold sample results for payment of due balances. We will not bill a third party without prior agreement among all parties acknowledging and accepting responsibility for payment.

SAMPLE COLLECTION AND SUBMISSION Clients not requesting collection services from Fairway are responsible for proper collection, preservation, packaging, and delivery of samples to the laboratory in accordance with current law and commercial practice. Fairway shall have no responsibility for sample integrity prior to the receipt of the sample(s) and/or for any inaccuracy in test or analyses results as a result of the failure of the client or any third party to maintain the integrity of samples prior to delivery to Fairway. All samples submitted must be accompanied by a completed chain of custody or similar document clearly noting the requested analyses, dates/time sampled, client contact information, and trail of custody.

SUBCONTRACTING Some analyses may require subcontracting to another laboratory. Unless the client indicates otherwise, this decision will be made by Fairway. Subcontracted work will be identified on the final report in accordance with NELAC requirements.

RETURN OF RESULTS Fairway routinely provides faxed or verbal results within 10 working days of receipt of sample(s) and a hard copy of the data results is routinely received via US Postal Service within 15 working days. At the request of the client, Fairway may offer expedited return of sample results. Surcharges may apply to rush requests. All rush requests must be pre-approved by Fairway. We reserve the right to charge an archive retrieval fee for results older than one (1) year from the date of the request. All records will be maintained by Fairway for 5 years, after which, they will be destroyed.

SAMPLE DISPOSAL Fairway will maintain samples for four (4) weeks after the sample receipt date. Fairway will dispose of samples which are not and/or do not contain hazardous wastes (as such term is defined by applicable federal or state law), unless prior arrangements have been made for long-term storage. Fairway reserves the right to charge a disposal fee for the proper disposal of samples found or suspected to contain hazardous waste. A return shipping charge will be invoiced for samples returned to the client at their request.

HAZARD COMMUNICATION The client has the responsibility to inform the laboratory of any hazardous characteristics known or suspected about the sample, and to provide information on hazard prevention and personal protection as necessary or otherwise required by applicable law.

WARRANTY AND LIMITATION OF LIABILITY For services rendered, Fairway warrants that it will apply its best scientific knowledge and judgment and to employ its best level of effort consistent with professional standards within the environmental testing industry in performing the analytical services requested by its clients. We disclaim any other warranties, expressed or implied by law. Fairway does not accept any legal responsibility for the purposes for which client uses the test results.

LITIGATION All costs associated with compliance to any subpoena for documents, for testimony in a court of law, or for any other purpose relating to work performed by Fairway Laboratories, Inc. shall be invoiced by Fairway and paid by client. These costs shall include, but are not limited to, hourly charges for the persons involved, travel, mileage, and accommodations and for any and all other expenses associated with said litigation.

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6G01054 #1 1 OF 3

SAMPLING, CHAIN OF CUSTODY AND ANALYSES RECORD FOR SOIL, GROUNDWATER AND AIR MONITORING **PA**

SAMPLING PLACE Dunbar Amoco
OWNER
ADDRESS University Drive
Dunbar PA
PROJECT NAME Dunbar Amoco

CC FIELD REP MK/JF
DATE 6/30/16
WEATHER Sunny 80°
PROJECT NO. 13-17313-02
ATTENTION

FIRM RESPONSIBLE FOR SAMPLING
Converse Consultants
2738 West College Avenue
State College, Pennsylvania 16801
814-234-3223
Fax 814-234-3255

	STATION NO. OR SAMPLE IDENT.	TIME	DEPTH TO WATER (FEET) DATUM	PURGING METHOD / SAMPLE DEPTH (FT.) INTERVAL	AMOUNT PURGED (GALS)	SAMPLING METHOD	CONTAINER DESCRIPTION (Vials)	pH	SPECIFIC CONDUCTANCE (μ mohs/cm.)	TEMP. °C	ANALYSIS REQUEST / COMMENTS
1	MW10	1043	33.97	Pump/bail	8	bailer	X	7.2	1022	15.2	(1993 PADEP PETROLEUM
2	MW10S	1050	15.46	bail	2.5	bailer	X	7.4	1350	15.3	SHORT LIST)
3	MW8	1140	37.28	pump	10.25	bailer	X	7.1	1081	19.9	
4	MW12	1230	36.65	baile	6.5	bailer	X	7.5	956	17.7	
5	MW12S	1305	24.55	bail	1	bailer	X	7.1	935	16.8	
6	MW15S	1415	13.55	bail	8	bailer	X	7.8	601	16.5	
7	MW16	1445	44.63	bail	8	bailer	X	7.8	681	17.4	
8	MW26S	1535	13.86	pump	10	bailer	X	7.4	1134	21.0	
9	DUP01	1235	36.65	bail	6.5	bailer	X	7.5	956	17.7	
10	MW7	1095	44.22	bail	2.5	bailer	X	4.9	721	17.6	
11	MW3	1049	14.74	pump	7.5	bailer	X	4.7	388	18.9	
12	MW6	1140	28.12	pump	50	bailer	X	3.8	392	16.2	
13	MW27	1205	21.37	bail	4.5	bailer	X	5.2	961	15.8	

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
	7-1-16	11:00	
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
	7-1-16	12:40	Roy Hetrick
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
Roy Hetrick	7-1-16	1345	BBarnes 7/1/16 1345

RECEIVING LABORATORY FAIRWAY LABS
ADDRESS
DATE RECEIVED TIME
ALL SAMPLES REC'D. INTACT ☐ YES ☐ NO
LIST SAMPLES MISSING/DAMAGED
ACCEPTED BY

1/92

DISTRIBUTION: *WHITE*—WITH SHIPMENT TO LAB. *CANARY*—CONVERSE. *PINK*—RETAINED BY FIELD REP.

6G01054 #2 2 of 3

SAMPLING, CHAIN OF CUSTODY AND ANALYSES RECORD FOR SOIL, GROUNDWATER AND AIR MONITORING **PA**

SAMPLING PLACE DUNBAR AMOCO
OWNER
ADDRESS ROUTE 119 DUNBAR, PA
PROJECT NAME DUNBAR AMOCO

CC FIELD REP. MK/JF
DATE 6/30/16
WEATHER SUNNY, 80°
PROJECT NO. 13-17313-02
ATTENTION DWS OR OBC

FIRM RESPONSIBLE FOR SAMPLING
Converse Consultants
2738 West College Avenue
State College, Pennsylvania 16801
814-234-3223
Fax 814-234-3255

	STATION NO. OR SAMPLE IDENT.	TIME	DEPTH TO WATER (FEET) DATUM	PURGING METHOD / SAMPLE DEPTH (FT.) INTERVAL	AMOUNT PURGED (GALS)	SAMPLING METHOD	CONTAINER DESCRIPTION: 2 Vials	pH	SPECIFIC CONDUCTANCE (μ mohs/cm.)	TEMP. °C	ANALYSIS REQUEST / COMMENTS
14	~~MW 10~~	~~1223~~	17.2	bail	6.5	bailer	X	5.3	991	16.4	(1998 PADEP PETROLEUM
15	MW 22	1259	15.6	bail	7	bailer	X	5.0	594	15.3	SHORT LIST)
16	MW 20	1351	12.73	bail	9	bailer	X	4.3	356	14.2	
17	MW 25	~~1425~~	10.94	bail	10	bailer	X	4.5	362	14.0	
18	POND	1450	—	—	—	bailer	X	—	—	—	
19	MW 19	1527	11.65	bail	9	bailer	X	3.9	253	13.9	
20	MW 24	1552	13.0	bail	9	bailer	X	3.9	368	14.3	
21	MW 23	1651	18.95	bail	6	bailer	X	4.2	374	17.6	
22	TB	—	—	—	—	—		—	—	—	

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
	7-1-16	11:00	
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
	9-1-16	12:40	Roy Hetrick
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
Roy Hetrick	7-1-16	1345	B. Barnes 7/1/16 1345

RECEIVING LABORATORY FAIRWAY
ADDRESS
DATE RECEIVED TIME
ALL SAMPLES REC'D. INTACT ☐ YES ☐ NO
LIST SAMPLES MISSING/DAMAGED
ACCEPTED BY

1/92

DISTRIBUTION: *WHITE*—WITH SHIPMENT TO LAB. *CANARY*—CONVERSE. *PINK*—RETAINED BY FIELD REP.

SOP FLI0601-002 Revision 21 Date: December 4, 2015 Page of

Chain of Custody Receiving Document 3 3

Receiver: BB Page ___ of ___

Date/Time of this check: 7/1/16 1535 Client: CONVERSE CONSULTANTS Lab # 6601054 #3

Received on ICE? Y ☐ * **Sample Temperature when delivered to the Lab:** 0.4 **Acceptable?** Y ☐ * **or In cool down process?** ☐ *
(Not applicable for WV compliance)

Custody Seals? Y Intact? Y

COC/Labels on bottles agree? Y ☐* Correct containers for all the analysis requested? Y ☐ * Matrix: water

COC #	Number and Type of BOTTLES										Comments
	Poly Non-Pres.	Poly H2SO4	Poly HNO3	Amber H2SO4	Amber Non-Pres.	Poly NaOH	VOCS (Head space?)	Other ☐ *	Properly Preserved ☐ *	Bacti	
1							2HCl		NA		
↓							↓		↓		
21											

*** DEVIATION PRESENT:**
- ⊗ **No Ice** ( )
- ⊗ **Not at Proper Temperature** ( )
- ⊗ **Wrong Container** ( )
- ⊗ **Missing Information:** ( )

CLIENT CALLED: YES ( ) EMAIL
By Whom: CINDY **Date:** 7/1/16

CLIENT RESPONSE:
- **Proceed with analysis; qualify data** (X)
- **Will Resample** ( )
- **Provided Information** ( )
- **No Response; Proceed and qualified** ( )

Client Contact: MISTY **Date:** 7/2/16

* Comments: VIALS MW125 HAVE HEAD SPACE

This is a date sensitive document and may not be current after June 29, 2016.

GROUNDWATER FATE AND TRANSPORT EVALUATION

FORMER ROUTE 119 AMOCO FACILITY
FACILITY ID #26-18711
1809 UNIVERSITY DRIVE (RTE 119)
CONNELLSVILLE, DUNBAR TWP.
FAYETTE CO., PENNSYLVANIA 15431

FOR

TIMOTHY AND MICHELLE SHELL
202 CENTER WOOD CIRCLE
UNIONTOWN, PA 15401

June 2017

Project Number: 13-17313-01

BY

CONVERSE CONSULTANTS
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State College, PA 16801
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statecollege@converseconsultants.com

CONTENTS

1.0 INTRODUCTION

1.1 GENERAL

Converse Consultants (Converse), on behalf of Tim and Michelle Shell, submits this Groundwater Fate and Transport Evaluation (F&T) in support of the activities being conducted at the Former Route 119 (Dunbar) Amoco facility located at 1809 University Drive (Route 119) in Dunbar Township, Fayette County, Pennsylvania (Property). Appendix A: Figure 1 presents the location of the former Former Route 119 Amoco (Property) relative to area roads and features. Please note that all references to an appendix in this fate and transport evaluation refer to an appendix of the main Site Characterization Report (SCR). Aquifer testing results and New Quick Domenico printouts are attached at the end of this F&T Report

PADEP, 2002: Section IV(A) states that "fate and transport analysis or modeling is a necessary part of site characterization and demonstrating attainment of an Act 2 standard. However, the regulations governing Act 2 use the term 'fate and transport analysis' as opposed to 'fate and transport model'. This particular distinction was made because it will not always be necessary to run an analytical or numerical quantitative 'fate and transport model' to achieve a standard."

This Fate and Transport Evaluation is intended to assist in the assessment of future groundwater contaminant plume behavior. Groundwater modeling techniques were used to analyze solute transport in the shallow bedrock aquifer at the Site. Model input parameters were based on calculated and measured hydraulic and chemical parameters, published values, and estimated values that were constrained within reasonable ranges for Site conditions. Conservative assumptions were used for estimated parameters.

As applicable, calibration of the model was performed using measured constituent concentrations in groundwater at downgradient well(s). Sensitivity analyses were performed as a check on the range of potential impact upon local receptors. No complete groundwater exposure pathway to human or ecological receptors is currently known to exist at the Site.

1.2 BACKGROUND

The Property (Former Route 119 Amoco) is located at 1809 University Drive (SR 119),

Dunbar Township, Fayette County, Pennsylvania (N39° 58' 04.21", W79° 38' 46.84" [NAD 83]). The Uniontown, Pennsylvania USGS 7.5-minute Quadrangle Map indicates that the elevation of the Property is approximately 1250 feet above mean sea level.

A release of product from former UST systems that were used to store unleaded gasoline systems was detected at the Site in 1996. Impacted soil from in area of the release and the former UST system was excavated and removed from the Property in 2005. Soil sample data indicates that soil that exceed NRMSC SHSs is still present in areas of the source property.

Data indicate that the water table is generally more than 10 feet below grade in the area of the property building and residences. Therefore, cultural features such as basements and utility trenches are not likely to be preferential pathways for groundwater movement.

No current receptor has been identified that is likely to be impacted by the release of unleaded gasoline at the former Dunbar Amoco.

The Site is located on the Allegheny Plateau near its border with the Valley & Ridge Province. The topography of the property is gently sloping to the southeast, toward Route 119. The Property sits between the forks of a Y-intersection where Route 119 intersects Hi-Way Supply Road. The site impacted by the release extends to the west across Hi-Way Supply Road and into a field sloping gently to the west behind the adjacent residence, which sits at approximately the same elevation as the Property.

The nature and distribution of dissolved phase unleaded gasoline constituents in groundwater at the former Amoco station site suggests a residual plume of gasoline constituents. Identified source areas include residual soil in the area of the release and LNAPL that has migrated onto a downgradient property.

A qualitative analysis of fate and transport indicates considerable mobility of constituents. As the release is more than 20 years old, the plume of dissolved phase constituents is expected to be stable or shrinking.

Use of properties in the general area of the Site consists primarily of commercial

properties, private residences, highways, and undeveloped land.

2.0 CONCEPTUAL MODEL

2.1 AFFECTED MEDIA

Groundwater and soil are the affected media at the Site.

2.2 SOURCE

A release of product from former UST systems that were used to store unleaded gasoline systems was detected at the Site in 1996.

Impacted soil from in area of the release and the former UST system was excavated and removed from the Property in 2005. Soil sample data indicates that soil that exceed NRMSC SHSs is still present in areas of the source property.

Recent data indicates a small plume of LNAPL is present on the downgradient Malago property. Converse has initiated product recovery of the LNAPL.

2.3 POTENTIAL OFF-PROPERTY SOURCES

No other potential source of gasoline constituents has been identified on the nearby properties.

2.4 CONSTITUENTS OF CONCERN

The following unleaded gasoline shortlist compounds (2008 list) were included in laboratory analysis during the site characterization activities and are considered constituents of concern (COCs) at the Property:

TABLE 2.1
CONSTITUENTS OF CONCERN (COCs)

CONSTITUENTS	CASRN
Benzene	71-43-2
Isopropylbenzene (Cumene)	98-82-8
Ethylbenzene	100-41-4
Methyl tert-Butyl Ether (MTBE)	1634-04-4
Naphthalene	91-20-3
Toluene	108-88-3
Xylene	1330-20-7
1,2,4-Trimethylbenzene	95-63-6
1,3,5-Trimethylbenzene	108-67-8

2.5 AQUIFER SYSTEM FRAMEWORK

The release of product impacted the shallow bedrock (water table) aquifer beneath the Property. Flow within the shallow bedrock aquifer flows to the west and southwest. Current and historical groundwater data indicates that the extent of impacted groundwater that exceeds the RMSC SHSs extends beyond the western property boundary. The impacted groundwater extends beneath Hi-Way Supply Road and beneath the residential property west of the Former Amoco property.

The Pennsylvania Department of Environmental Resources, Bureau of Topographic and Geologic Survey, *Geologic Map of Pennsylvania, 1980* indicates that the bedrock that underlies the unconsolidated material at the Site is classified as the Pennsylvanian-aged Glenshaw Formation. The Glenshaw Formation is described as cyclic sequences of shale, sandstone, red beds, and thin limestones and coals. Shale bedrock was encountered during soil boring and monitoring well installation activities at depths of 5 to 10 feet below grade.

Refer to the text of the SCR report for a complete discussion of the aquifers and the site conceptual model.

2.6 HYDROLOGIC DATA AND BOUNDARIES

No hydrologic boundary was identified for this Site.

2.7 PREFERENTIAL PATHWAY

No active preferential pathway was identified at the site.

2.8 PLUME CONFIGURATION AND CONTAMINANT DISTRIBUTION

Petroleum constituents have been detected in groundwater at the Property since 1996. Recent groundwater sampling results show a similar distribution of contaminants at the Property to those detected during the historical site characterization. The highest concentrations of contaminants are located south of the former USTs on the property and west of the property beyond Hi-Way Supply Road on the residential (Malago) property. Concentrations on the property have generally decreased over this period but remain above the RMSC. Monitoring wells are located at distances that range from approximately 0 to 600 feet from the former UST system area (source area). Groundwater analytical data for the newly installed monitoring wells

indicate that the extent of impacted groundwater in the water table aquifer has been delineated.

2.9 PLUME STABILITY

Based on the age of the plume, the plume appears to be stable or shrinking. Recently installed monitoring wells have insufficient sampling events to assess stability of the distal end of the impacted groundwater plume. Appendix B: Table 2 presents the historical groundwater analytical data.

3.0 FLOW MODEL

3.1 COMPUTER CODE

3.1.1 Code Selection

Computer code and flow modeling using New Quick Domenico (NQD) was conducted for this report. No preferential pathway has been documented at the Site. As no preferential flow or anisotropy is documented, the use of the NQD model for the shallow fractured bedrock is appropriate.

The following subsections discuss input parameters that are based on currently known Site information or professional judgment.

3.1.2 Constituents of Concern Source Concentrations

See Section 2.4 for the list of COCs. The well with the highest concentrations will be treated as the source area for groundwater modeling.

3.1.3 Dispersivity

NQD estimates the longitudinal dispersivity using the equation:

a(x) = X (distance to a measured point (feet))/10

NQD estimates the transverse dispersivity using the equation:

a(y) = a(x)/10

NQD estimates the vertical dispersivity using the equation:

a(z) = a(x)/20 to a(x)/1000: NQD stipulates “in general, it is recommended for conservative use of NQD to use a very small vertical dispersion of 0.001, unless vertical monitoring can reliably justify a larger number. Because of the way NQD is set up, a vertical dispersion of zero cannot be used. A value of about 0.001 is suggested for initial uncalibrated or conceptual applications”.

3.1.4 First Order Decay coefficient

The first order decay coefficient (lambda) can be calculated from published half-life values ($t_{1/2}$) using the following equation:

Lambda (λ) = $Ln(2)/t_{1/2} = 0.693/t_{1/2\ (days)}$

This coefficient describes the first-order decay process for dissolved constituents. NQD assumes that the rate of biodegradation depends only on the concentration of the constituent and the rate coefficient.

Howard *et al*. 1991. Handbook of Environmental Degradation Rates presents ranges of published half-life values in days for certain compounds. The range of published half-life values in days and the range of the calculated λ's for the COC are presented on the table below. *§250, Appendix A, Table 5* presents the first order degradation coefficient in $(K)(yr^{-1})$. λ can be calculated from the *§250* first order degradation coefficient by:

$\lambda = (K)(yr^{-1})/365$ days-year

The published $(K)(yr^{-1})$s and calculated λ's are presented in Table 3.1 below.

TABLE 3.1
PUBLISHED HALF LIFE RANGE

CONSTITUENT	CASRN	DAYS	λ	§250 $(K)(yr^{-1})$	§250 λ
Benzene	71-43-2	10 -722	0.0693 - 0.00096	0.35	0.00096
Cumene	98-82-8	4 - 16	0.17 – 0.043	15.81	0.043
Ethylbenzene	100-41-4	6 - 228	0.116 - 0.0024	1.11	0.003
MTBE	1634-04-4	56 - 365	0.0123 - 0.0019	0.693	0.0019
Naphthalene	91-20-37	1 - 258	0.693 - 0.0027	0.98	0.0027
Toluene	108-88-3	4 - 28	0.17 – 0.025	9.01	0.025
Xylene	1330-20-7	14 - 365	0.05 – 0.0019	0.69	0.0019
1,2,4-TMB	95-63-6	unknown	unknown	4.5	0.012
1,3,5-TMB	108-67-8	unknown	unknown	4.5	0.012

The half-life values typically used in the initial calibration runs are as published in *§250, Appendix A, Table 5 of the Act 2* regulations. The PADEP values are extremely conservative and provide a good estimate for a "worst-case" scenario.

3.1.5 Plume Width at Source

Based on the approximate size of the impacted area at the Amoco property, a value of 100 feet was selected for the plume width. The width is considered to be independent of aquifer depth.

3.1.6 Plume Thickness at Source

Based on the current groundwater fluctuations, a value of 10 feet was selected for the plume thickness unless otherwise discussed in the text.

3.1.7 Time of Release

The release of petroleum to the environment was first identified during UST closure activities at the property in 1996. The age of the release is assumed to be slightly older than when it was identified.

3.1.8 Hydraulic Conductivity

Hydraulic conductivity is discussed in Section 6.6 of the SCR. Letterle conducted rising head slug tests on monitoring wells MW-3, MW-8 and MW-9 in 2006. The predicted hydraulic gradient for monitoring well MW-3 was three orders of magnitude higher than the calculated hydraulic conductivity for MW-8 and MW-9. Although Letterle dismissed the data from MW-3, the very low conductivity values for MW-8 and MW-9 are inconsistent with the size of the impacted groundwater plume. The hydraulic conductivity for MW-3 of 1.26 feet/day will be used as an initial estimate.

A value of 1.26×10^{-0} ft/day will be used in the model.

3.1.9 Hydraulic Gradient

See Section 6.5 of the SCR. The average hydraulic gradient was calculated to be 0.11.

TABLE 3.3
HYDRAULIC GRADIENT

AQUIFER	GRADIENT (I)
Shallow Bedrock	0.11

3.1.10 Retardation Factor

3.1.10.1 General

Retardation is the “reduction in the rate at which dissolved contaminants move through an aquifer due to sorption of contaminants to the solid aquifer matrix. The degree of retardation depends on both aquifer and constituent properties. The retardation factor is

the ratio of the groundwater seepage velocity to the rate that organic chemicals migrate in the groundwater. A retardation value of 2 indicates that if the groundwater seepage velocity is 100 ft/yr, then the organic chemicals migrate at approximately 50 ft/yr".

The retardation factor (R) is calculated by the model using the equation:

$R = 1 + (K_d \times P_d)/n$ where $K_d = K_{oc} \times f_{oc}$

P_d = bulk density
n = porosity
K_{oc} = organic carbon partition coefficient
f_{oc} = fraction of organic carbon

3.1.10.2 Soil Bulk Density

Soil bulk density (P_d): 1.8 g/cm^3

A reasonable estimate based on the soil that was encountered. Although New Quick Domenico is designed to be used for unconsolidated relatively homogenous aquifers it can be used to model fate and transport in bedrock aquifers. In this application of the model, the bulk density was left unchanged and other input values were changed within the model to mimic site values.

3.1.10.3 Aquifer Porosity

Effective porosity (n): 0.05 for bedrock (professional judgment)

An effective porosity of 0.05 was selected based on experience with the calibration of similar models in similar geologic settings.

3.1.10.4 Organic Carbon Partitioning Coefficients

TABLE 3.4
ORGANIC CARBON PARTITIONING COEFFICIENTS (K_{oc})(§250)

COMPOUND	K_{oc}
Benzene	58
Cumene	2,800
Ethylbenzene	220
MTBE	12

TABLE 3.4 ORGANIC CARBON PARTITIONING COEFFICIENTS (K_{oc})(§250)	
COMPOUND	**K_{oc}**
Naphthalene	950
Toluene	130
Xylene	350
1,2,4-TMB	2,200
1,3,5-TMB	660

The above values are presented in *§250, Appendix A, Table 5 of the Act 2* regulations.

3.1.10.5 Organic Carbon Content

For the initial simulations the estimated value for fraction of organic carbon (f_{oc}) = 0.0001 was used for modeling transport. The selected value was a conservative estimate based on the geologic setting (bedrock).

f_{oc} = 0.0001 (conservative estimate based on bedrock setting)

3.1.11 Groundwater Seepage Velocity

Groundwater seepage velocity (V_s) is calculated by the NQD model using the equation:

V_s (feet per year [ft/yr]) = ((K x I)/*n*) x 365 days per year, where:

K = hydraulic conductivity (ft/day)
I = hydraulic gradient (foot/foot)
n = porosity

Shallow aquifer V_s = 1,012 ft/yr = (1.26)(0.11)/0.05 times 365 days/yr

3.1.12 Model Grid

The model grid is fixed by the model user.

3.2 CALIBRATION

Calibration targets typically include:

- Identification of reasonable values for hydraulic parameters and degradation coefficients for use in the predictive models based on best judgment.
- Reasonable fit between simulation data and the available groundwater contaminant data for modeled constituents.

3.3 SIMULATIONS

3.3.1 Shallow Bedrock Aquifer

Benzene

For the purpose of calibrating the benzene model the following data was selected:

Well	Concentration	Distance
MW-12S	972	0
MW-15S	236	160
MW-20S	65	230
MW-25S	<1	425

The data is from the June 2016 sampling event. The benzene dataset suggests contaminant transport from a source area at MW-12S towards MW-25S. This is consistent with the historical direction of contaminant transport.

Measured values and conservative estimates were used as input to the NQD model.

Parameters changed to calibrate the model:

Hydraulic conductivity – was reduced to 0.25 feet/day, which is within the range that was measured during slug tests.

Hydraulic gradient – The initial measurements for hydraulic gradient were taken from source area monitoring well MW-10S to MW-12S, the nearest downgradient off-property well. Subsequent well installation have shown the MW-12S has an anomalously low water level which provides and inflated estimate of the gradient across the site. The gradient across the site to the west from MW-10S to MW-25S is approximately 525 feet (distance) divided by 15 feet (average difference in water table). This average gradient is equal to 0.028 and was used in the calibration of the model.

Fraction Organic Carbon – This parameter was increased to 0.0004 to provide a best fit with the field data.

Lambda – Lambda for benzene was reduced to 0.002 to provide a best fit with the observed field data. This lambda is within the range of values from Table 3.1 (above) that was measured by Howard, et al.

The maximum benzene concentration detected in the monitoring wells since 2013 was used to predict the maximum extent of the impacted groundwater plume for benzene.

The model predicts that benzene will migrate a maximum of 360 feet from MW-12S at a value that equals or exceeds the RMSC SHS. Based on this analysis, benzene in the shallow bedrock plume migrates beyond the property boundary but does not reach the nearest surface water discharge point (pond or stream). Spreadsheets for benzene generated by the NQD model are located at the end of this Appendix.

MTBE

For the purpose of calibrating the MTBE model the following data was selected:

Well	Concentration	Distance
MW-18S	310	0
MW-12S	90.5	160
MW-15S	13.3	230

The data is from the June 2014 sampling event. The benzene dataset suggests contaminant transport from a source area at MW-18S towards MW-25S. This is consistent with the historical direction of contaminant transport.

Parameters changed to calibrate the model:

Hydraulic conductivity – was reduced to 0.25 feet/day, which is within the range that was measured during slug tests.

Hydraulic gradient – This parameter was decreased to 0.028, see previous discussion for benzene.

Fraction Organic Carbon – This parameter was increased to 0.0004, see previous discussion for benzene.

The maximum MTBE concentration detected in the monitoring wells since 2013 was used to predict the maximum extent of the impacted groundwater plume for MTBE. The model predicts that MTBE will migrate a maximum of 230 feet from MW-18S at a value that equals or exceeds the RMSC SHS. Based on this analysis, MTBE in the shallow bedrock plume migrates beyond the property boundary but does not reach the nearest surface water discharge point (pond or stream). Spreadsheets for MTBE generated by the NQD model are located at the end of this Appendix.

3.3.2 Zone 2 Bedrock Aquifer

Numerous monitoring wells at the site monitor a slightly deeper (Zone 2) aquifer within

bedrock. In general, constituent concentrations in the shallow zone have been significantly higher than concentrations in the Zone 2 monitoring wells. Although the aquifers are connected, the constituent concentrations indicated limited vertical migration. Modeling of the shallow aquifer is protective of concentrations in the Zone 2 aquifer.

As concentrations in the Zone 2 bedrock aquifer are lower, no numerical modeling of contaminant transport was conducted.

3.3.3 Residual Analysis

A residual analysis is the difference between the computed and observed values at a specific time and location. The variable of interest in this analysis for the NQD model is a constituent concentration at a particular time and distance from the source. As downgradient calibration targets were not available for this analysis, a residual analysis was not possible.

3.3.4 Sensitivity Analysis

The parameters that have the most influence on the NQD model results are lambda (degradation rate), hydraulic conductivity, hydraulic gradient, and fraction organic carbon. The most conservative lambda for each compound was used throughout the simulations. The hydraulic conductivity and hydraulic gradients that were utilized are measured site specific values. A very conservative 0.0001 fraction organic carbon was selected as a conservative value in the absence of organic carbon data for the bedrock.

4.0 SUMMARY OF RESULTS

Analytical data indicates that constituent concentrations in groundwater at the former Dunbar Amoco migrate beyond the property boundary onto residential, commercial, and undeveloped property that is located west and south of the former release. The dissolved phase plumes that travel the greatest distance are benzene and MTBE. As some of the monitoring wells were installed within the past year, insufficient data has been collected to establish the stability of distal portions of the impacted groundwater plume.

The New Quick Domenico Model was used to simulate contaminant migration within the shallow bedrock aquifer. Although flow occurs within bedrock, the conceptual model of flow at the site is consistent with the assumptions and limitations of the New Quick Domenico Model. Measured hydraulic parameters, contaminant data and best estimates of physical parameters were used as input to the simulations. The simulations were calibrated with downgradient contaminant data. Maximum concentrations that were detected within the past three years were used to predict the 'worst case' extent of the contaminant plume.

Specifically, the model predicts that the constituents will migrate the following maximum distances at concentrations that exceed the SHSs:

Constituent	Aquifer	Distance
Benzene	Shallow Bedrock	360 feet from MW-12S
MTBE	Shallow Bedrock	230 feet from MW-18S

The data indicate that the plumes have not and will not migrate to the nearest surface water bodies.

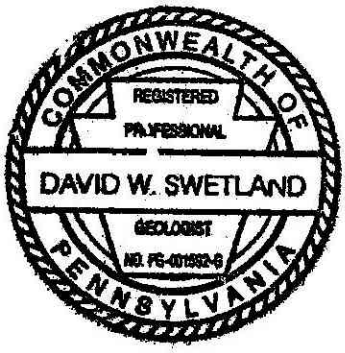
5.0 QUALIFICATIONS

Mr. David Swetland, P.G. was the primary Converse person responsible for the preparation of this Report. Mr. Swetland has more than twenty-seven (27) years of experience conducting remedial investigations and providing environmental consulting services throughout the Northeast. Mr. Swetland has been a Geologist at Converse's State College, Pennsylvania office since 1991.

David Swetland, P.G.
Senior Geologist

DWS/PC:tp

AFFIX SEAL
HERE



ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION,1ST ORDER DECAY and RETARDATION - WITH CALIBRATION TOOL

Project:	PSC (BMW-3 off-site)						
Date:	5/17/2017	Prepared by:	DWS				
		Contaminant:	Benzene				

SOURCE CONC (MG/L)	Ax (ft)	Ay (ft)	Az (ft)	LAMBDA	SOURCE WIDTH (ft)	SOURCE THICKNESS (ft)	Time (days) (days)
			>=.001	day-1			
0.01	1.20E+01	1.20E+00	1.00E-03	0.00096	30	10	4400

Hydraulic Cond (ft/day)	Hydraulic Gradient (ft/ft)	Porosity (dec. frac.)	Soil Bulk Density (g/cm^{-3})	KOC	Frac. Org. Carb.	Retard-ation (R)	V (=K*i/n*R) (ft/day)
2.40E-02	0.083	0.05	1.8	58	1.00E-04	1.2088	0.032958306

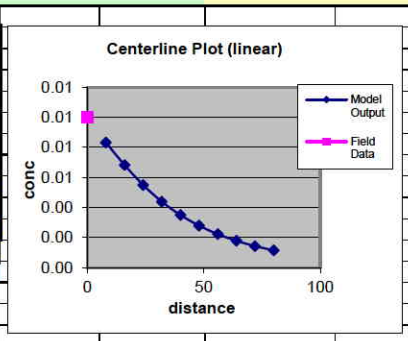
NEW QUICK_DOMENICO.XLS

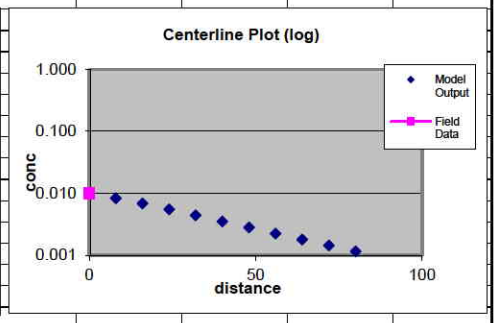
SPREADSHEET APPLICATION OF "AN ANALYTICAL MODEL FOR MULTIDIMENSIONAL TRANSPORT OF A DECAYING CONTAMINANT SPECIES" P.A. Domenico (1987) Modified to Include Retardation

Point Concentration

x(ft)	y(ft)	z(ft)
120	0	0

	x(ft)	y(ft)	z(ft)
Conc. At	120	0	0
at	4400	days =	
			0.000
			mg/l





AREAL MODEL	CALCULATION DOMAIN
Length (ft)	80
Width (ft)	50

	8	16	24	32	40	48	56	64	72	80
50	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
25	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.000	0.000	0.000
0	0.008	0.007	0.005	0.004	0.004	0.003	0.002	0.002	0.001	0.001
-25	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.000	0.000	0.000
-50	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Field Data:	Centerline C Concentration			0.01						
	Distance from Source			0						

ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION,1ST ORDER DECAY and RETARDATION - WITH CALIBRATION TOOL

Project:	PSC (BMW-3 off-site)						
Date:	5/17/2017	Prepared by:	DWS				
		Contaminant:	1,2,4-TMB				

SOURCE CONC (MG/L)	Ax (ft)	Ay (ft)	Az (ft)	LAMBDA	SOURCE WIDTH (ft)	SOURCE THICKNESS (ft)	Time (days) (days)
			>=.001	day-1			
0.165	1.20E+01	1.20E+00	1.00E-03	0.012	30	10	4400

Hydraulic Cond (ft/day)	Hydraulic Gradient (ft/ft)	Porosity (dec. frac.)	Soil Bulk Density (g/cm^{-3})	KOC	Frac. Org. Carb.	Retard-ation (R)	V (=K*i/n*R) (ft/day)
2.40E-02	0.083	0.05	1.8	2200	1.00E-04	8.92	0.004466368

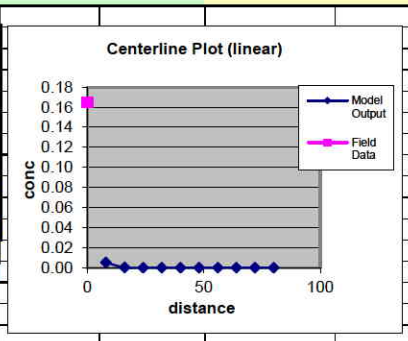
NEW QUICK_DOMENICO.XLS

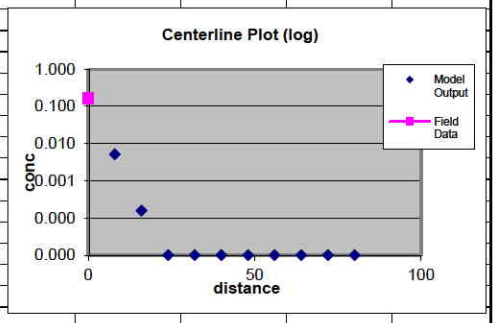
SPREADSHEET APPLICATION OF "AN ANALYTICAL MODEL FOR MULTIDIMENSIONAL TRANSPORT OF A DECAYING CONTAMINANT SPECIES" P.A. Domenico (1987) Modified to Include Retardation

Point Concentration

x(ft)	y(ft)	z(ft)
120	0	0

	x(ft)	y(ft)	z(ft)
Conc. At	120	0	0
at	4400	days =	
			0.000
			mg/l





	AREAL MODEL	CALCULATION DOMAIN
	Length (ft)	80
	Width (ft)	50

	8	16	24	32	40	48	56	64	72	80
50	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
25	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
-25	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
-50	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Field Data:	Centerline C Concentration			0.165						
	Distance from Source			0						